AUGUST 22, 1955

STEEL

The Metalworking Weekly

Unions in the Office

Pressure for organizing white-collar workers intensifies. Will become major objective of merged CIO-AFL

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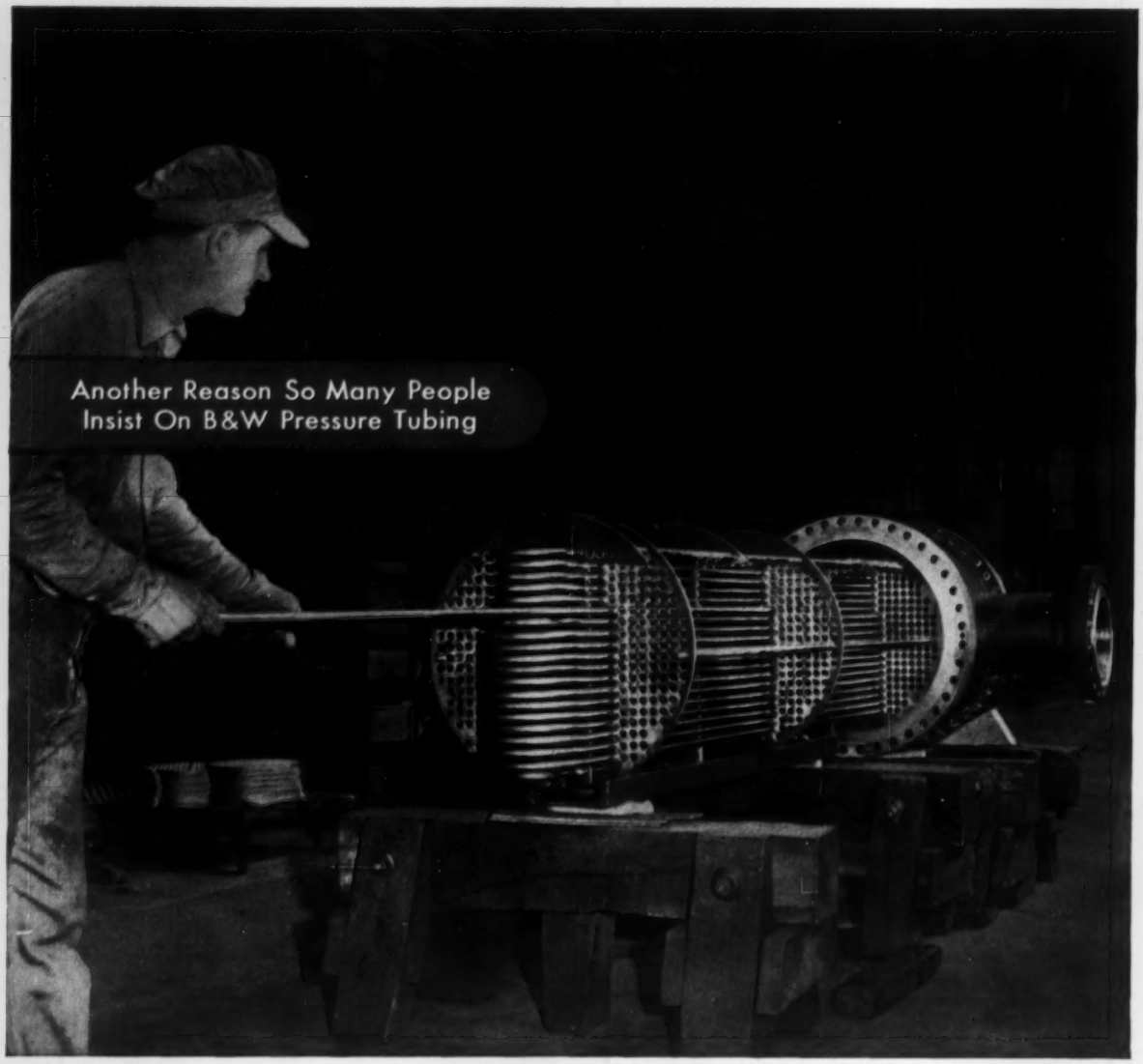


TALK ABOUT TOLERANCES!!

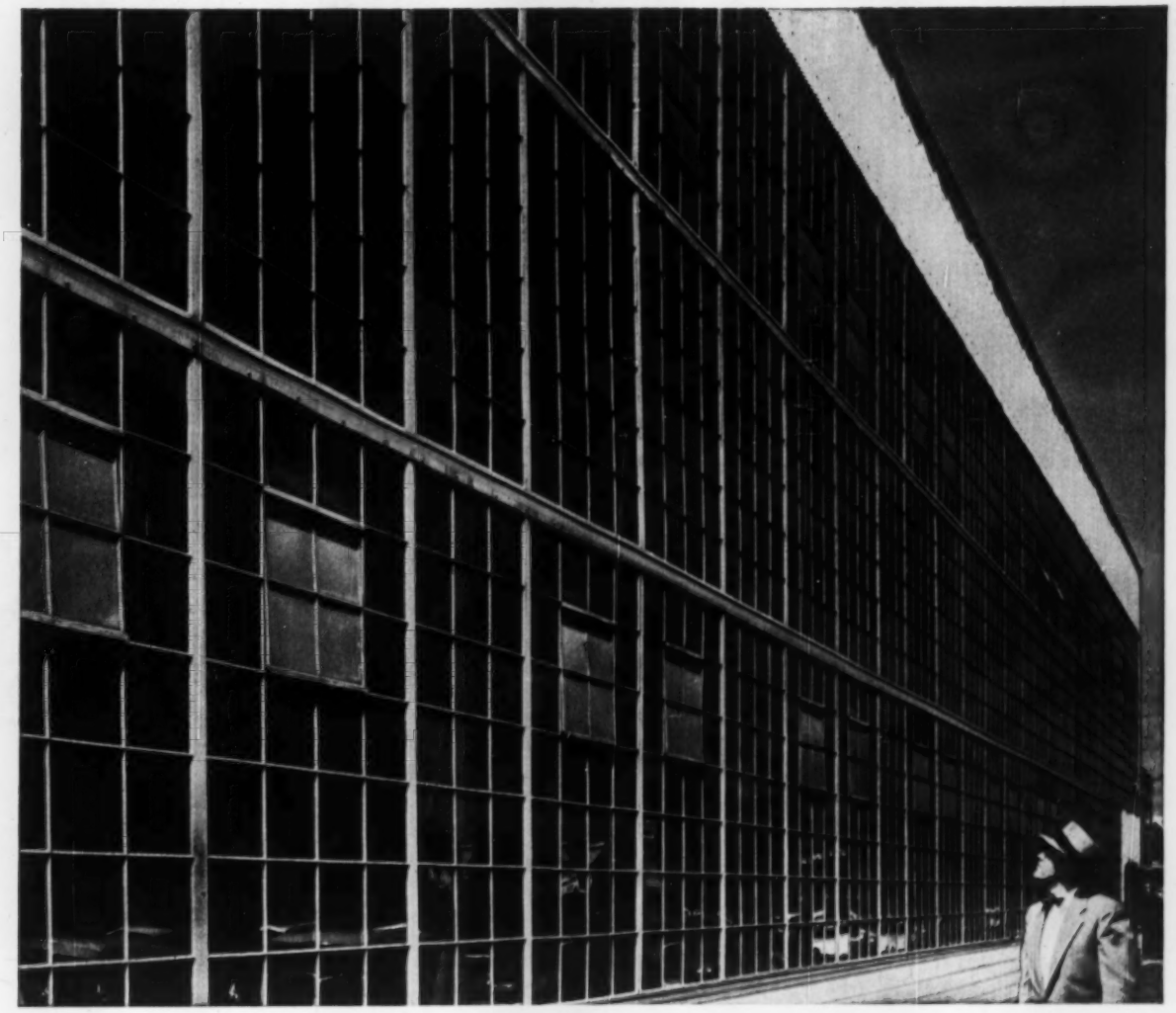
In oil fields, refineries, chemical plants—wherever heat transfer is important—you'll find Griscom-Russell heat exchangers on the job. The Griscom-Russell Company uses B&W Pressure Tubing to help build its reputation for efficient equipment. There's no jamming or tube distortion when threading B&W tubing through tube sheets and baffle plates. This preoccupation with close tolerances—a workaday rule at both B&W and Griscom-Russell—assures closer control, greater efficiency in many heat transfer operations. In addition, B&W Pressure Tubing is famous for uniform ductility, tight joints, ease of rolling in, and low installation cost in any heat exchanger or condenser application.

For the complete story of how B&W Pressure Tubing can improve your operation, why not call in Mr. Tubes, your link to B&W. *Or write today for Bulletin TB-329 S.*

B&W
TUBULAR PRODUCTS DIVISION

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa. and Milwaukee, Wis.: Seamless Tubing, Welded Stainless Steel Tubing
Alliance, Ohio: Welded Carbon Steel Tubing
Milwaukee, Wis.: Seamless Welding Fittings

TA-5022(P)



The secret of their strength . . . hot-rolled special sections

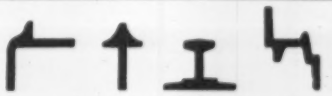
THESE industrial windows are framed with steel—sturdy steel sash fabricated from Bethlehem hot-rolled special sections.

By using special sections rolled to their drawings and specifications, window manufacturers are able to produce sash that has great strength, yet is light, economical and pleasing to the eye.

Whatever your product may be, we urge you to look into the many advantages of Bethlehem hot-rolled special sections. They often eliminate the need for costly machining, forming and fabricating operations. And special sections give you wide freedom of design, because rolling puts extra metal where it's needed for *strength;* eliminates excess metal for *economy.* The result is you can make a better product, and at less cost.

Other Bethlehem carbon-steel bar products include hot-rolled carbon bars in both standard sections and bar-size shapes. Also semi-finished carbon-steel products: blooms, billets and slabs.

For complete information about any of these products, please contact the Bethlehem sales office nearest you.



A few of the many complex sash sections supplied to manufacturers by Bethlehem.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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The storage facilities, pictured above, are part of Phillips Petroleum Company's many installations which help assure you of a dependable, year-around supply of Philgas. Pipelines carry Philgas to strategically situated underground storage facilities, with capacity of hundreds of thousands of barrels. In this manner Philgas, produced in summer, is available to meet peak demands of the winter months.

Many of this nation's leading industries are installing their own Philgas systems for core baking, mold drying, heat treating of all kinds, ceramic operations, food processing, textile finishing, metal cutting, space heating and scores of other uses. Philgas is also used as a motor fuel by many of these same industries.

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Here's WHY you get better welding faster with HOBART arc welders

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. . . check the generator
. . . check the performance

for famous HOBART QUALITY
. . . plus the

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that give you low welding costs

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2 Remote Control for improved quality of welds
3 Dual Control gives 1000 combinations of welding heat
4 Convenient Polarity Switch
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7 Push button self starting industrial engine
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9 Protective steel canopy with hinged side panels

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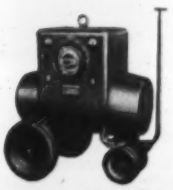
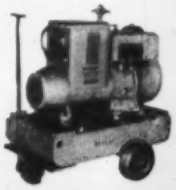
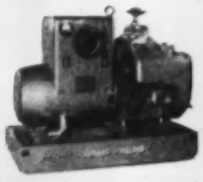
"One of the world's largest builders of arc welders"

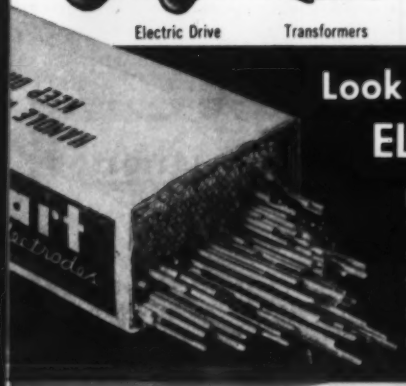
Hobart Brothers Co., Box ST-85, Troy, Ohio, Phone 21223


Electric Drive

Transformers


Air Cooled "Husky Boy"


Air Cooled AC Power —AC Welder



Look to HOBART for Better ELECTRODE VALUES

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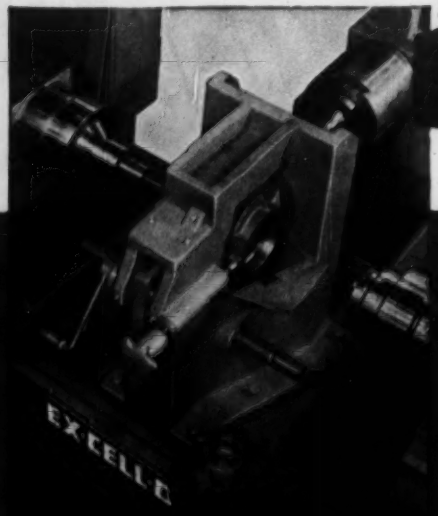
FIRM _____

ADDRESS _____

☐ Would like to try sample of Hobart Electrodes for (type of work) _____

Ex-Cell-O 3-Way Precision Boring Machine. Standard way units—tooled to suit the work.

Note the simplicity of this tooling.



Cut Costs—Combine Operations

. . . INCREASE YOUR PROFITS in Today's Competitive Market

Heavy lines show the machined surfaces. Small single triangles indicate single operations; double triangles indicate rough-and-finish operations.

Once a part is properly located and clamped, it's good practice to do as much machining on it as possible before it's moved! Related dimensions are held closer, handling time minimized and production increased.

This Ex-Cell-O 3-Way Precision Boring Machine performs 5 roughing and 18 finishing operations on a cast-iron crankcase used in the refrigeration industry. Tolerances are extremely close on the crankshaft and cylinder bores. Net production for the roughing operation is 33 parts per hour; for finishing, 36 parts per hour.

Ask your local Ex-Cell-O representative about all the other advantages of Ex-Cell-O Way Machines—or write today for Bulletin.

XLO
EX-CELL-O for PRECISION

SEE EX-CELL-O AT THE MACHINE TOOL SHOW

54-30

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STEEL
Metalworking Weekly

AUGUST 22, 1955
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AMBLER, PA.

Detroit, Mich. Niles, Calif. Windsor, Ont.

behind the scenes

To Button Up White Collars

Nobody spilled a laundry bag on the cover: That's simply artist Tom Bryan's method of calling attention to an article (on page 37) dealing with the union drive to organize white-collar workers. Unions are directing sweet talk toward engineers, clerical workers and other nonsupervisory and professional personnel, inviting them to defend themselves against their predatory employers by banding together and contributing toward the support of whichever union gets to them fustest with the mostest promises.

Webster's New International Dictionary says that "white collar" is a colloquial expression, designating or pertaining to the class of salaried workers whose duties permit a well-groomed appearance. The time has come, apparently, when this neatly attired segment of the national labor force finally has attracted union attention.

STEEL's report on the activity is completely objective, but we can't help throwing in an extra paragraph for what it is worth:

Between the months of March and September, all artificers and workers hired for wages by the day or week, shall work from 5 in the morning until between 7 and 8 at night, except for two and a half hours a day permitted for meals and drinking; and between September and March, said artificers and laborers shall work from the spring of the day until the night of the same day, upon the pain to forfeit one penny for every hour's absence. This was the law of the land in 1562, and if a man complained about it he could be arrested for conspiracy. It almost seems that in 1955 if you **don't** complain you might be arrested for playing dead.

Top Tips

When opportunity knocks you have only yourself to blame if you ignore or pass up the signal to fortune. For example we can tell you where you can pick up 120 lots of dandy oscilloscopes; 52,000 wood packing boxes, assorted sizes; 60 lots of pontoon barges; miscellaneous airplane parts; and a wide variety of locomotives, medical equipment, rubber heels, flattened tin cans and contaminated jet fuel—all at from 5 to 7 cents on the dollar. The Three Sons' Publishing Co., Springfield, Ill., last week brought out its first issue of *Surplus Age*, an eight-page folder mailed directly from Washington each Wednesday. It tells you *what* Government surplus is for sale *where*—and if you are a subscriber, you will be confronted with so many wonderful bargains you won't be able to resist them. We already are s ocking up on corrugated paper, manila rope, miscellaneous spares for heavy engineering equipment and a mess of concrete mixers. For 7 cents on the dollar, what else can you do?

U.S. Helps Keep Us Hep

A new catalog of popular publications, available from the Superintendent of Documents, U. S. Printing Office, Washington, D. C., lists the government's best sellers for 1954. Carper W. Buckley, the superintendent, tells us that Americans thirsted so fiercely for information they exhausted much of his material from stock. Right now he is fresh out of booklets on atomic energy education, closets and storage space, air infiltration through windows and methods of estimating loads in plumbing systems. He can, however, supply you with booklets on an annotated bibliography of selected references on the solid-state reactions of the uranium oxides; ratproofing buildings and premises, intellectual abilities in the adolescent period and hamster raising.

Translate MJHJJL

The sphere weighed 187.5 lb. So many of you liked cryptograms, here is one that requires the substitution of ciphers for letters:

R	B	M	J	S	H
R	K	J	R	L	C
L	B	M	S	J	J
R	L	C	J	S	H
M	J	H	J	J	L

Shrdlu

(Metalworking Outlook—Page 29)

TO CHANGE THE

Style

CHANGE THE

STEEL

SWITCH TO

Sharonart

Changing the style of your product can be as simple as changing the steel from which it is made. Sharonart, Sharon's original steel with the rolled-in design patterns, enables metal fabricators to alter the appearance of their product without redesigning and retooling costs. Select a design from the many already available, or originate your own repetitive pattern and it will be rolled right into the surface of the steel, that can be fabricated by the processing methods already established in your plant. Get the entire story of this new material. Write for your free Sharonart booklet today.

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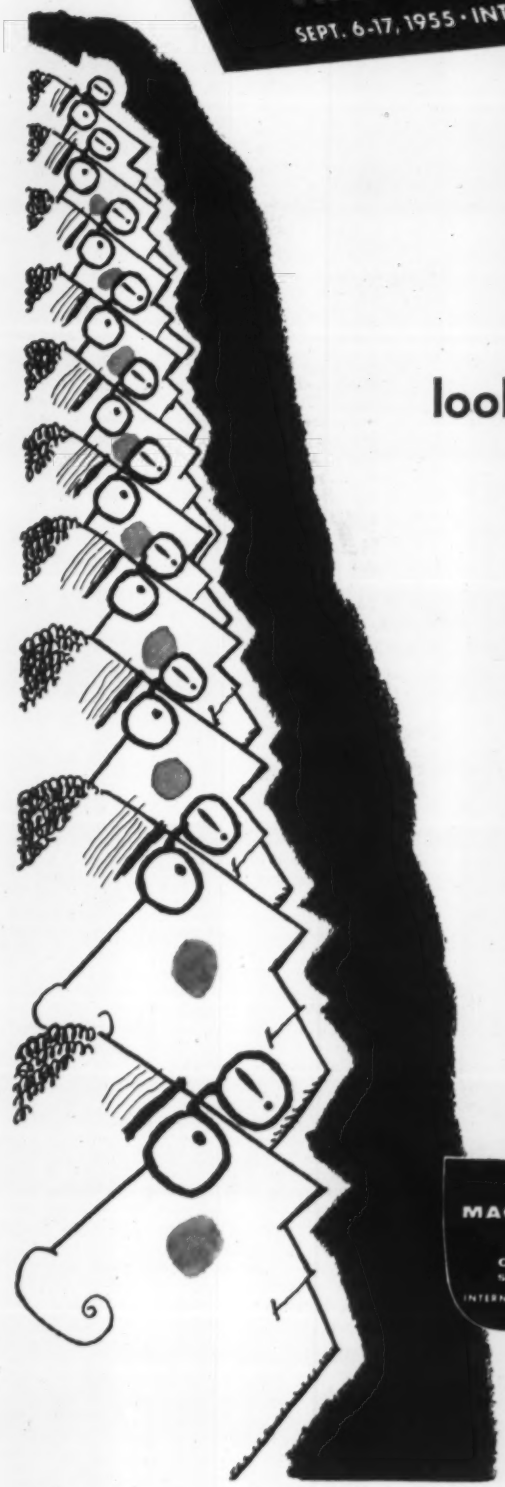
2680

The Machine Tool Show

SEPT. 6-17, 1955 · INTERNATIONAL AMPHITHEATRE · CHICAGO, ILL.



12,291*
Purchasing Agents
looking for greater values!

Where will they look? At the Machine Tool Show, in Chicago, in September, of course. Better plan to be there, too! There you'll see **the world's best investment**—***in action!***

Not since 1947 have so many manufacturers assembled so many new models, all under one roof, ready to demonstrate to you their fastest, most ingenious, most economical production methods. More than ninety per cent of the country's leading machine tool builders will be on hand.

Will you?

You'll not only see the latest in machine tools, you'll see the latest in machine tool accessories as well—two shows for the price of one: the Machine Tool Show, at the International Amphitheatre, and the Production Engineering Show, on the Navy Pier. Your Machine Tool Show badge will admit you to both.

Bring your key buyers of metalworking equipment with you; share with them this unequaled opportunity to see comparative demonstrations of the latest in cost-cutting methods—at the 1955 Machine Tool Show, your guide to greater values.

NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION
2071 East 102 Street · Cleveland 6, Ohio

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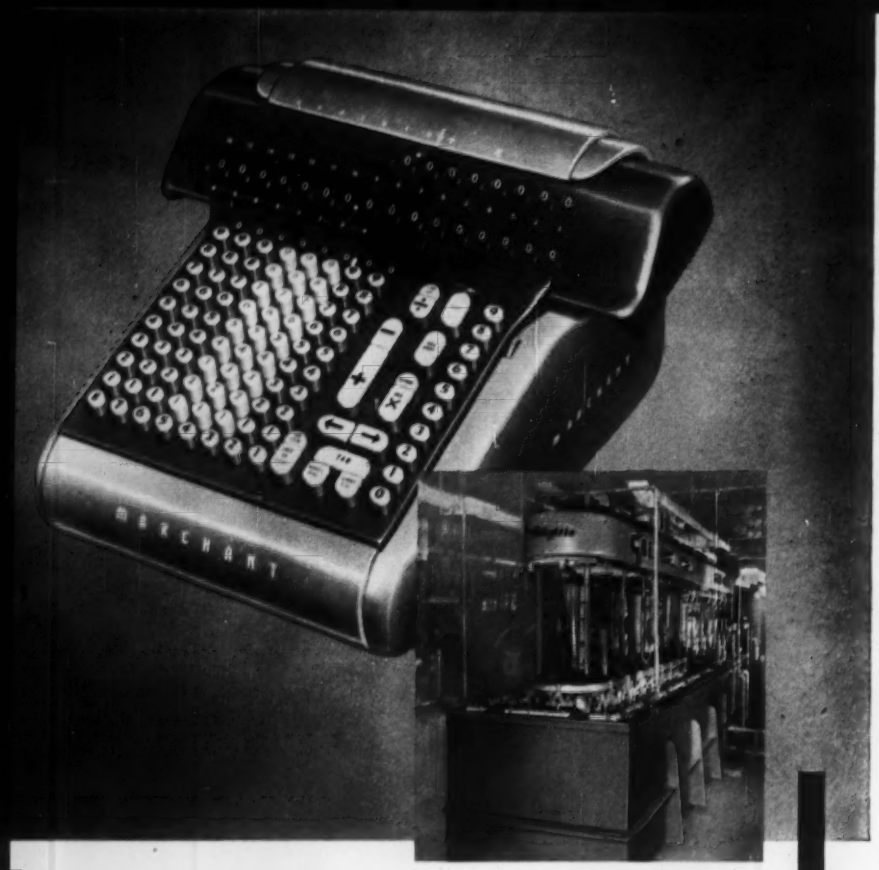

MARCHANT GOES AUTOMATIC IN PLATING

Udylite Automatic Plating Machine Brings Big Savings to Calculator Maker

The same benefits Marchant Calculators, Inc., enjoy from the installation of a Udylite automatic plating machine can be yours—and for only a modest capital investment.

Better process control, reduction in operating and maintenance costs and improved work quality are the result of Marchant's installation of a Udylite Junior Full Automatic. In addition, they are now experiencing better ventilation, better and safer working conditions, manufacturing control with built-in instrumentation, greatly reduced materials handling and a minimum of rejects.

When the time came to install new plating facilities for their expanding business, Marchant naturally turned to Udylite. After a study of the Marchant problem Udylite engineers recommended the Udylite Junior with an automatic load and unload conveyor for the cadmium plating to fine tolerances of the many parts of the Marchant Calculator.

And so, another business friendship has been formed.

We at Udylite can help you improve quality and save money in your metal finishing operations. For quick response fill in the coupon below.

WORLD'S LARGEST PLATING SUPPLIER

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COMPANY

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DETROIT 11, MICHIGAN

LETTERS TO THE EDITORS

Concise Comment

Your story, "Manganese Quotas May Expand" in the "Windows of Washington" column of July 18 (page 60) was a most concise and excellent presentation.

J. Carson Adkerson
President
American Manganese Producers Association
Washington

Blast Furnace Directory

Do you have a directory of blast furnaces? We would like to know furnace names, locations and capacities and whether they use coke or charcoal.

O. D. Fisher
President
National Live Stock & Mining Co.
Seattle

• *Being forwarded are two directories published in* STEEL. *The 1954 report (Sept. 20, pages 112-126) is the latest complete list of blast furnaces. Addresses of the producers, current in practically all cases, are found in the 1951 report (Oct. 4, pages 121-136). We know of no blast furnace which still uses charcoal.*

Honey of a Story

I thought your article, "Put Business Trends to Work" (July 18, page 93), was a honey. Point after point which came to mind as I read I found taken up and nicely handled on the next page or paragraph.

While touched on more than once, I think the admonition not to be swayed by the last person talked to cannot be stressed too much. Funny how our immediate personal experiences color the whole world for us and how our moods and feelings influence others.

I would like to see this article used as text or collateral reading in management training courses.

J. W. Vanden Bosch
Manager
Statistics & Business Information
Cleveland Chamber of Commerce
Cleveland

We expect your article to be of invaluable help to our forecast committee. The article, "What Cost Price Fighting?" (July 25, page 41) also will help clarify our thinking and point to the solution of a vexing problem. We appreciate the convenience of article reprints on current management subjects.

A. Sarka
Asst. Production Manager
Moore Products Co.
Philadelphia

You did a terrific job. I hope your Program for Management Series wins first place again this year.

It is only with co-operation such as

(Please turn to page 12)

Steel body using Yoloy "E" for it's greater strength. This truck was developed for carrying large advertising signs.

QUALITY YOUNGSTOWN SERVICE

Here's a high-strength low-alloy steel that's *easy to fabricate*

All Hi-strength steel unit for beverage deliveries.

Truck made entirely of Yoloy "E". This is a pallet type with sliding steel doors, mounted on standard chassis.

IT'S Yoloy "E", one of the Youngstown family of low-carbon, nickel-chrome-copper steels that are easy to fabricate, easy to weld.

Specialty Engineering Co. of Philadelphia, for example, reports that Yoloy will take a 180-degree bend without developing edge cracks. And material at the weld and immediately next to it has the same high quality as the parent metal.

The customer gets other advantages, too. With Yoloy steels, you can design with lighter gauges and have the same strength. On trucks, like those illustrated, it means more payload, less deadweight. High resistance to corrosion of Yoloy "E" means longer life and less maintenance. And it has high resistance to shock and vibration.

Whatever you fabricate, chances are you can benefit by using one of the Yoloy family of steels. Yoloy is available in sheets, plates, strip, pipe, mechanical tubing, bars, shapes and cold finished bars. All made by Youngstown.

Photos courtesy of Specialty Engineering Co.

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

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Let's find out how to solve YOUR stamping problem:

If your company uses reasonable quantities of formed parts in steel, steel alloys, brass, inconel, magnesium, aluminum, or titanium, you have a problem: should you **make** or **buy** the stampings you need? To make the **right** decision — a decision that may **save** or **cost** your company many thousands of dollars — you must ask and answer many questions on labor force, plant space, machinery, costs, design, operations, production level, future volume.

We would like to help you reach a good decision, favorable to your company's long-run profit picture.

At this moment, **we don't know the answer** to your problem — but **let's find out!** Since no two stamping jobs are ever exactly alike, **Presteel** is proud of being able to offer a proven procedure to arrive at the right answer. Our engineers, backed by Worcester Pressed Steel's 72 years of intensive stamping experience, will sit down with you at your convenience, isolate the facts that count, and help you get all the basic information for you to make an impartial, sound decision.

For a "Make it, or Buy it" consultation with a Presteel representative, write us today. There is no charge or obligation.

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625 Barber Ave., Worcester 6, Mass.

Please ask your representative to call. ☐

Name_____
Title_____ Company_____
Street_____
City_____ Zone_____ State_____

LETTERS

(Concluded from page 10)

yours that we can do an effective job of serving our business community, and we do appreciate your approach.

Zelda W. Milner
Commercial Agent
Field Office
U. S. Dept. of Commerce
Cleveland

A Word on Re-Equip

Referring to your article, "When To Re-Equip" (June 20, page 99), I should like to add a word.

In formulas I have seen used to compare operating costs of old and new equipment, depreciation for old equipment is omitted. This puts new equipment at a great and normally undeserved disadvantage.

As a cost accountant I feel depreciation has to be figured till the unit is replaced. Only a few companies exist where this practice would not be applicable. What acceptance of this idea would mean to your economy is easy to conceive.

B. A. Margo
Consulting Management Engineer
St. Laurent, Que.
Canada

In the Market

Do you have a list of manufacturers of silicon bronze strip? If so, we would appreciate it as we are in the market for this material.

Holbrook Mahn
President
Band-It Co.
Denver

• *We are sorry but we do not have a list. We suggest you write C. H. Pihl, advertising and sales promotion manager, Copper and Brass Research Association, 420 Lexington Ave., New York. Most copper and brass mills are members of this association.*

Induction Heating

The article, "Induction Heating Enters Brass Tube Picture" (Aug. 1, page 88), states that the 7-in. diameter is nicely inside the limiting 6-in. diameter wherein low frequency heating becomes efficient.

This 6-in. minimum diameter applies only to steel, not to nonferrous metals. The minimum practical diameter for high efficiency with brass is about 3 in., and we have heaters operating on 4-in. and 5-in. pieces just as Scovill operates on a 7-in. piece.

The article also states the heater will produce a billet every 1½ minutes. The unit in production is rated at 72 billets an hour or one every 50 seconds, and normally operates between 60 and 72 pieces per hour.

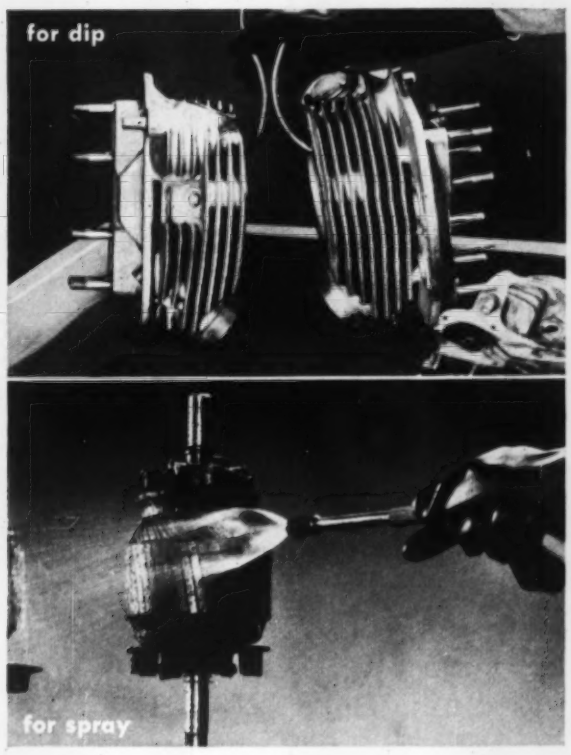
John Logan
President
Magnethermic Corp.
Youngstown, O.

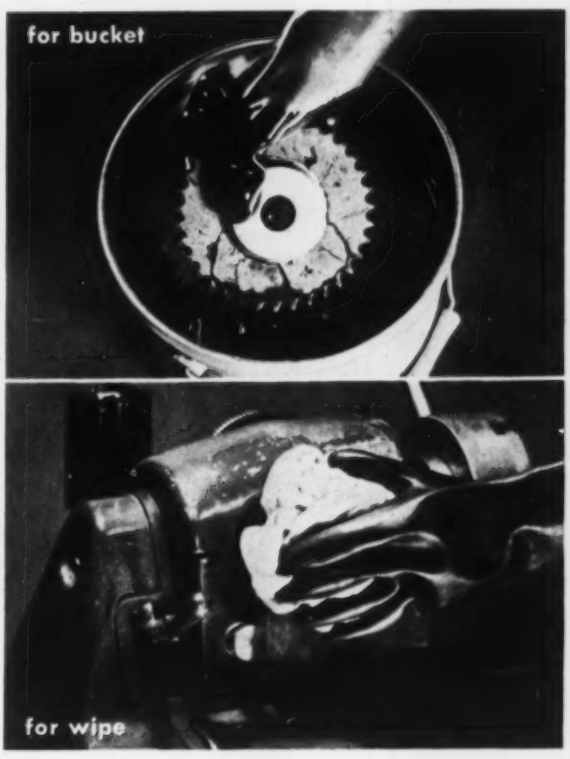
DOW . . . industry's most complete line of chlorinated solvents

DOW

CHLOROTHENE

for dip . . . bucket . . . spray . . . wipe





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Versatile, easy handling Chlorothene is made *exclusively* by Dow. Contact your local Dow distributor today for a supply. And don't forget that he can meet all your *vapor degreasing* solvent needs, too, with stabilized Dow Trichloroethylene and Perchloroethylene. If you're in doubt about how to reach *your* Dow distributor, or would like more detailed Chlorothene information, write direct to THE DOW CHEMICAL COMPANY, Dept. S 669D, Midland, Michigan.

*203 — 26 April 1955
Certificated for use as an article of stores on board vessels. This certificate covers only hazard in the use of this product. The efficiency of this product is not passed upon. U. S. Coast Guard.

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you can depend on DOW SOLVENTS

DOW

"CHIPLESS MACHINING" by

Write for the new Hydrospin Bulletin No. M-1873-1.

CINCINNATI 42" x 50" HYDROSPIN — Full bed design. Parts up to 42" OD and 50" long can be produced. Also available in 42" x 50" Half Bed design (one roller slide assembly). Hydraulic contour tracing attachment, turning and mandrel grinding attachments and carriers for end-mounted rollers also available.

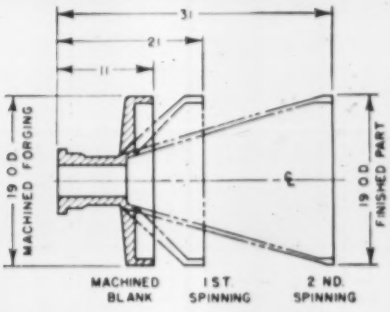
the NEW Cincinnati Hydrospin

cuts costs 1/2 to 4/5 on expensive-to-shape parts

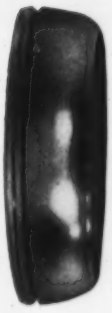
HYDROSPINNING is The Cincinnati Milling Machine Co. process for *roll-flowing* ductile metals into a wide variety of shapes having circular cross-section. A metal blank—sheet, plate, pre-formed cup, casting or forging—is caused to flow longitudinally along a rotating mandrel. Hydraulically powered rollers, capable of applying pressures up to 400,000 psi, force the metal against the mandrel to generate the desired part shape, such as those shown at right.

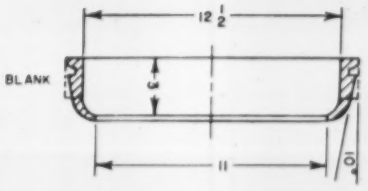
Parts are quickly produced, normally in one pass of the rollers. Wall thickness—straight, curved and tapered sections—can be held to tolerances as close as ±.004". The metal, having undergone a severe shear deformation, possesses increased strength, hardness and resistance to fatigue. In many instances, less costly materials have been successfully substituted for alloyed stock and heat-treating operations have been eliminated. Subsequent machining operations are usually limited to light cuts in areas that cannot be spun.

Savings on part production costs running as high as 50%—80% are now being made with the Cincinnati Hydrospin. *Can you also profit?* For detailed information, contact the Cincinnati Milling field engineer in your area.

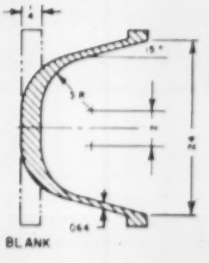


Turbine shaft, Hydrospun from premachined AISI 4340 alloy steel forging, in two operations.





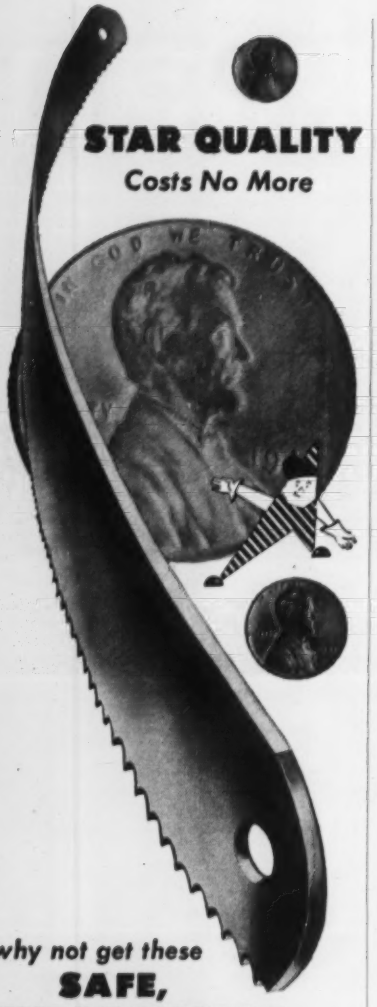
Hood, Hydrospun from rolled and Heliarc-welded ring of type 321 stainless steel, in two operations. First roller plunge-formed groove. Second, tracer-controlled roller thinned and closed tapered wall.



Bullet-nose shell, Hydrospun in one operation from ¼" thick C-1020 hot rolled steel plate, using tracer-controlled roller.

CINCINNATI **Hydrospin**

PROCESS MACHINERY DIVISION
THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U. S. A.



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Always ready to serve you...

with a coal that's exactly right

Name your choice—in "Bituminousland" along the Baltimore & Ohio, we have it! Here Nature has stored a supply of economical heat and energy sufficient to last for centuries.

B&O Bituminous coals exist in wide variety. The mines that produce them are thoroughly mechanized so that costs are kept low, size and quality uniform. Nearness to industrial centers results in low transportation costs, and the ease of storing removes the need for expensive facilities. Furthermore, new methods and equipment have increased the burning value of Bituminous.

ASK OUR MAN! Let him direct you to the best coal for your needs, and explain proper firing methods. You'll be more than pleased at the improved efficiency, economy, and cleanliness of B&O Bituminous.

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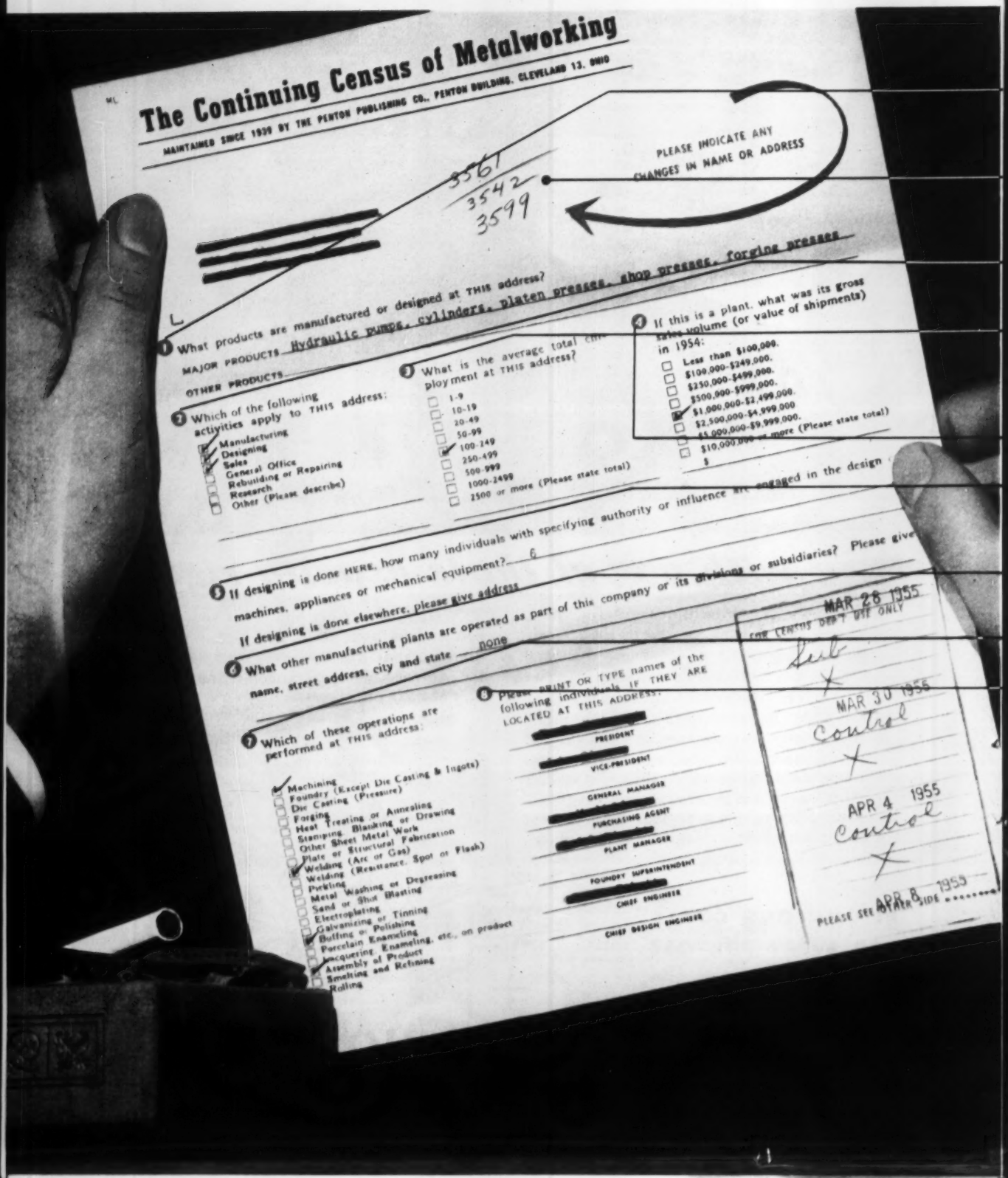

of a PENTON publication's Effective Coverage

- Gathering the information for our Continuing Census is much like a survey you might make for *your* company. To determine what kind of plant it is, we first ask, "What do they make?"
- They tell us, and we tag it with its proper Standard Industrial Classification* (S.I.C.) number or numbers. Now, we know in which product categories this plant belongs.
- Next, if there is research or designing activity, it will be of special significance to several of our publications.
- How big is the plant? Employment figures help STEEL, AUTOMATION and NEW EQUIPMENT DIGEST determine whether the plant is sufficiently large to justify coverage, or *how many* copies are required to insure adequate coverage.
- Gross sales volume provides an additional yardstick for measuring the plant's buying power.
- The presence of the designing function, and the number of engineers, gives MACHINE DESIGN a further means of evaluating the engineering activity.
- With the major trend to decentralization, it is important to recheck the Company's *other* plants. (In one case there are 115 separate plant locations.)
- Operations performed provide special interest clues for STEEL, FOUNDRY and AUTOMATION.
- Who's Who? Markets are people *after* you know the plants. This gives us a start on checking the people.

Add it all up and you can see how this Continuing Census benefits you as an advertiser. It is just *one* of the many reasons why PENTON publications help to make good advertising *more* effective.

*All manufacturers use this system in reporting to the U. S. Bureau of the Census.

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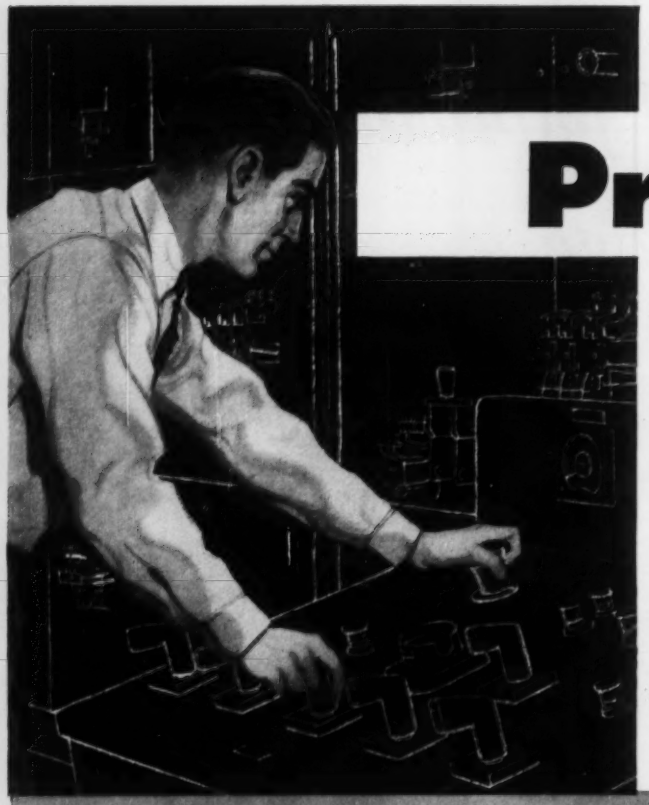

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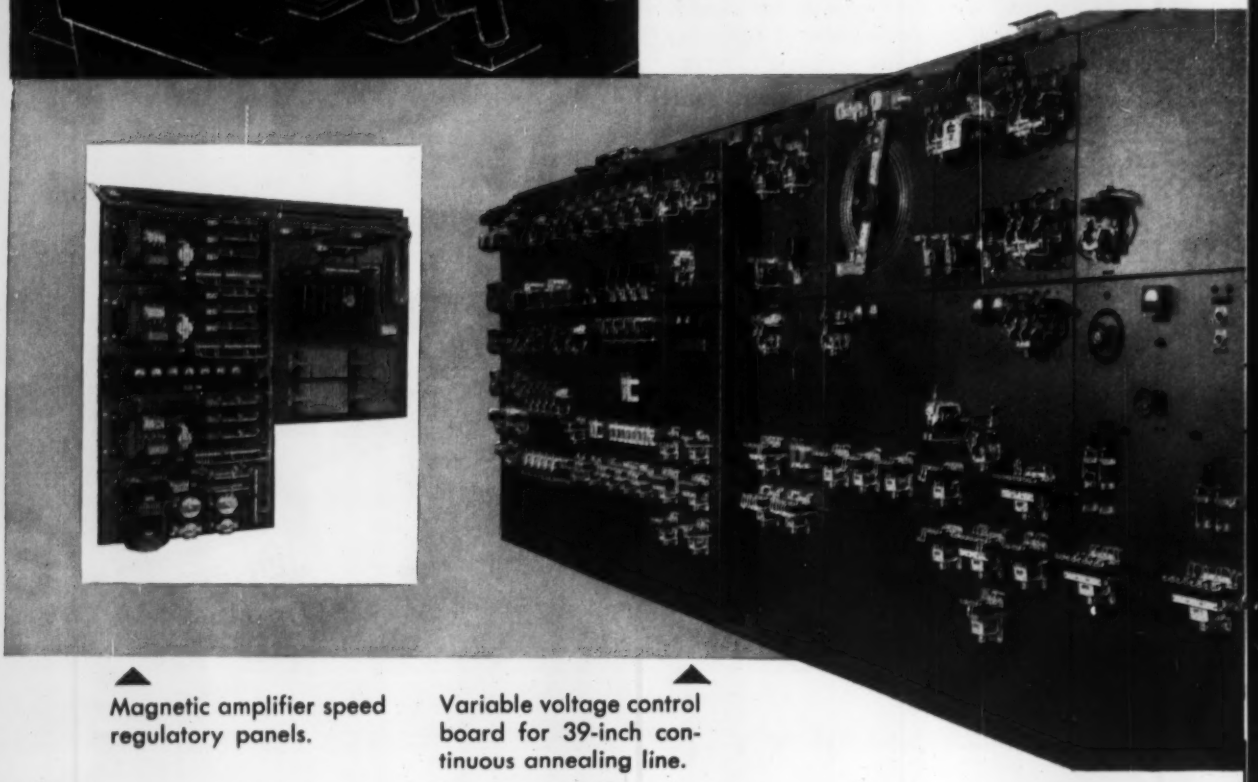

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Delivery section control board.

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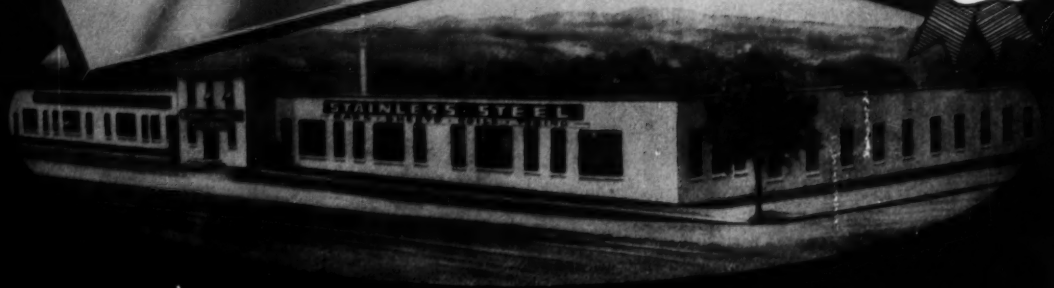

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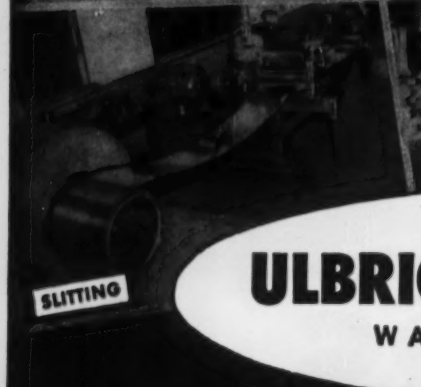

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WALLINGFORD, CONN.

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CALENDAR
OF MEETINGS

Aug. 22-23, Stanford Research Institute and National Industrial Conference Board: Symposium on electronics in automatic production. Sheraton-Palace hotel, San Francisco. Information: National Industrial Conference Board, 247 Park Ave., New York 17, N. Y. Secretary: Herbert Briggs.

Aug. 24-26, West Coast Electronic Manufacturers Association: Western electronic show and convention, Civic Auditorium, San Francisco. Information: WESCON, 344 N. LaBrea Ave., Los Angeles 36, Calif.

Aug. 28-Sept. 1, National Association of Furniture Manufacturers: Furniture supply fair, Conrad Hilton hotel, Chicago. Association's address: 666 Lake Shore Dr., Chicago 11, Ill. Secretary: John M. Snow.

Aug. 31-Sept. 26, World's Fair of Power: S. Lake Shore Dr. adjacent to Soldiers Field, Chicago. Sponsor: General Motors Corp., General Motors Bldg., Detroit 2, Mich.

Sept. 5-6, American Machine Tool Distributors Association: Annual meeting and show, Blackstone hotel, Chicago. Association's address: 1900 Arch St., Philadelphia 6, Pa. Secretary: Thomas A. Fernley Jr.

Sept. 6-8, Industrial Truck Association: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Association's address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: William Van C. Brandt.

Sept. 6-8, Material Handling Institute Inc.: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

Sept. 6-17, Metalworking Machinery & Equipment Exposition: Coliseum, Chicago. Information: Exhibition & Convention Management Inc., 2689 E. Overlook Rd., Cleveland 6, O. General Manager: C. L. Wells.

Sept. 6-17, National Machine Tool Show: International Amphitheatre, Chicago. Sponsor: National Machine Tool Builders Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

Sept. 6-17, Production Engineering Show: Navy Pier, Chicago. Sponsor: National Machine Tool Builders' Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

Sept. 9-11, Metal Powder Association: Fall closed meeting, the Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: Robert L. Ziegfeld.

Sept. 11-14, National Metal Trades Association: Eastern plant management conference, Essex and Sussex hotels, Spring Lake, N. J. Association's address: 122 S. Michigan Ave., Chicago 3, Ill. Secretary: C. L. Blatchford.

Sept. 11-16, American Chemical Society: Fall meeting, University of Minnesota, Minneapolis. Society's address: 1155 16th St., N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

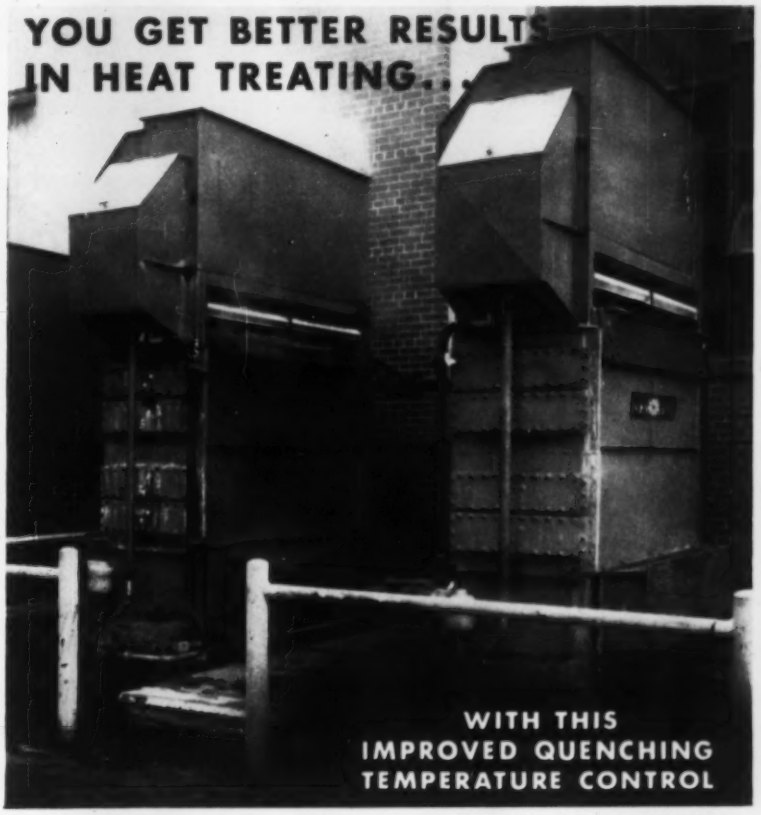
Sept. 12-14, American Road Builders Association: Annual conference of county engineers and officials, New Riverside hotel, Gatlinburg, Tenn. Association's address: World Center Bldg., Washington 6, D. C. Secretary: Eugene Reybold.

Sept. 12-14, Allied Railway Supply Association: Annual meeting and exhibit, Sherman hotel, Chicago. Association's address: P.O. Box 5522, Chicago, Ill. Secretary: Charles F. Weil.

Sept. 12-15, Automotive Electric Association: Fall meeting, the Homestead, Hot Springs, Va. Association's address: 16223 Meyers Ave., Detroit 35, Mich. Secretary: S. W. Potter.

Sept. 12-15, Society of Automotive Engineers Inc.: Tractor meeting and production forum, Hotel Schroeder, Milwaukee. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

Sept. 12-16, Instrument Society of America: Annual conference and exhibit, Shrine Auditorium and Exposition Hall, Los Angeles. Society's address: 1319 Allegheny Ave., Pittsburgh 33, Pa. Executive director: William H. Kushnick.



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● Use the NIAGARA AERO HEAT EXCHANGER to control the temperature of your quench bath and you remove the heat at its rate of input, always quenching at the exact temperature that will give your product the best physical properties. You get uniform results throughout the day's production, prevent losses, avoid rejections, increase your heat treating capacity.

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In the installation illustrated the quench is caustic soda. Water also is accurately cooled and the system is easily kept clean. With an oil quench an extra advantage is to prevent flash fires.

You can cool and hold accurately the temperature of all fluids, air, gases, water, oils, solutions, chemicals for processes and coolants for mechanical and electrical equipment. With the Niagara Aero Heat Exchanger you have closed system cooling, free from dirt and scale.

For further information write for Bulletin No. 120

NIAGARA BLOWER COMPANY

Dept. S. 405 Lexington Ave. New York 17, N.Y.

District Engineers in Principal Cities of United States and Canada

In soaking pits, Johns-Manville Sil-O-Cel C-22 Insulating Brick provide outstanding performance as back-up insulation.

Specify

Johns-Manville SIL-O-CEL C-22 Insulating Brick

the diatomaceous silica brick that retains its high cold crushing strength of 700 psi throughout normal service range

Because of its exceptional strength Sil-O-Cel C-22 Insulating Brick has gained wide acceptance as an all-purpose insulating brick. It is especially recommended for soaking pits, open hearth bottoms, slab heating furnaces, hot blast stoves, coke ovens and other high temperature equipment.

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For direct exposure or back-up to 1600F, use Sil-O-Cel 16L Insulating Brick. This newest member of the J-M diatomaceous silica insulating brick family has *less than 0.1% reversible thermal expansion at 1600F.* Conductivity is 1.07 Btu in/sq ft/F/hr at 1000F mean temperature with a density of 33-35 lb/cu ft. Cold crushing strength is 350 psi. Sil-O-Cel 16L serves equally well as back-up insulation or exposed refractory lining.

For back-up at higher temperatures, specify Sil-O-Cel® Super Insulating Brick with an unusually high temperature limit of 2500F.

Write today for further information on Sil-O-Cel Insulating Brick and Insulating Fire Brick. Ask for Brochure IN-115A. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, 565 Lakeshore Road East, Port Credit, Ontario.

Johns-Manville *first in* **INSULATION**

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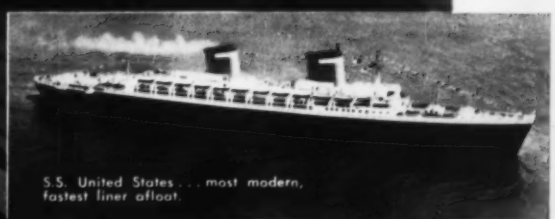

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Nothing finer!

A statement from
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"Our records show that when a manufacturer once discovers the uniform quality of Roebling flat spring steel, he becomes a steady Roebling customer."

You, too, *pay* for the best spring steel . . . make sure you *get* it. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

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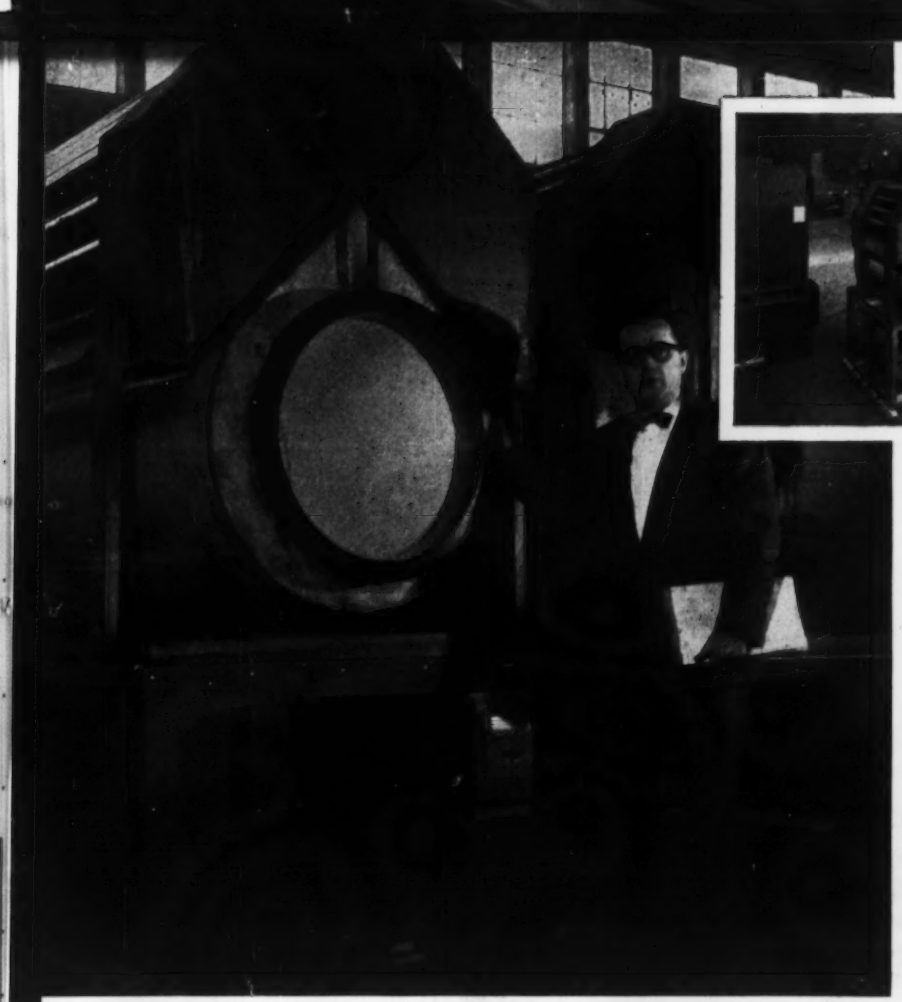

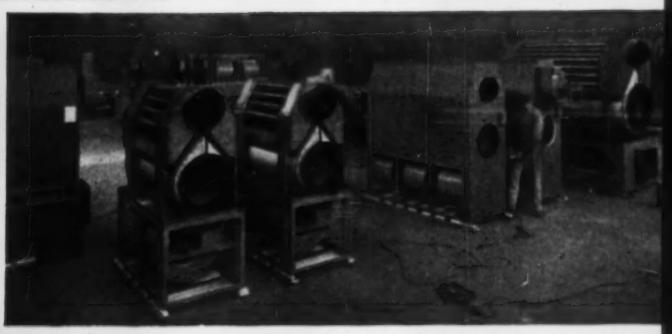

Final assembly of the heaters. Teardrop design of the firebox eliminates turbulence, permits entire surface to be wiped by air flow.

Mr. George Costello, Secretary-Treasurer, displays the Stainless Steel firebox for a National Heater.

Firebox is upside down for finish welding. Welders and other workers report no difficulty fabricating the Stainless Steel.

1945: Heater size reduced 25% with Stainless Steel

TODAY: *Increased unit efficiency—increased heater sales*

National Heater Company, St. Paul, Minn., has been making quality industrial heaters for 20 years. In 1945, they looked for a way to reduce the *size* of the units without reducing efficiency.

Primarily, it was a problem of moving the steel firebox walls closer to the flame. But carbon steel would eventually oxidize and lose its shape when brought too close to the flame. So they tried Stainless Steel, and it worked.

The new firebox was made from 14-gauge Stainless Steel. It retained its shape, strength and durability at the elevated temperature. It also eliminated the need for a refractory material.

The new firebox was 25% smaller than the old one. The Stainless Steel has given superb performance, and sales have increased.

There have been no fabricating problems. National Heater uses the same equipment for Stainless Steel that they use for carbon steel.

No other metal combines the corrosion resistance, strength, appearance and easy fabricating properties of Stainless Steel. Keep this remarkable metal in mind when you plan a new design – and for top quality, specify service-tested USS Stainless Steel.

See "THE UNITED STATES STEEL HOUR," Televised alternate weeks. Consult your newspaper for time and station.

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USS STAINLESS STEEL

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USS

UNITED STATES STEEL

A splicing chamber in downtown Manhattan, New York City. At high tides these cables are submerged in heavily polluted, corrosive river water. The cable racks and supports, and the ladder are Monel. This ladder was installed 16 years ago and is as good as new. The supports were installed 13 years ago and are standing up just as well.

16 years in a manhole

...yet Monel shows no sign of corrosion

You're looking into a splicing chamber, looking down from a New York City Street.

The air down there is damp, corrosive. And at high tides polluted harbor water creeps up underground ducts, covers the cables that connect the city's nearly 4 million phones, its telegraph lines, its vital police and fire alarm systems.

It covers the cable supports, the cable support racks, even much of the ladder you see.

All these fixtures were once made of steel. But they deteriorated so rapidly under these severely corrosive conditions, that they had to be replaced in two or three years.

So Monel came into the picture.

In *this* manhole it has been down there 16 years. In others much longer — the oldest Monel ladder was installed in 1918. And in all that time this customer has *never had to replace any Monel equipment because of failure due to corrosion.*

That's something to think about!

And when you do, think of Monel for equipment used in *your* industry — equipment for service where conditions are severe, and corrosion resistance, strength, and toughness are *musts.*

Send for a copy of *Standard Alloys for Special Problems.* This exceptionally handy booklet gives you examples of the many practical applications for Monel and other Inco Nickel Alloys. It shows you *which* alloy to use for different destructive conditions. And it's yours for the asking. Write Inco for it today.

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Low Carbon Nickel • Duranickel®

Metalworking Outlook

White Collars Fray

Engineers and other professional employees in industry are earning 4.5 per cent more than they did a year ago, a survey by the American Management Association shows. Nonsupervisory production workers in the metalworking industry are getting 3.5 per cent more per hour than they received a year ago, but are working longer work weeks. Result: Production workers are getting weekly incomes 7.5 per cent higher than a year ago. The more rapid gains in compensation by organized production workers in recent years are helping unions in their campaign to organize white-collar employees.

More Foil Coming

The aggressive promotion to sell aluminum foil is paying off in a big way for all the major aluminum producers. Reynolds Metals, which led the foil promotion campaign, is building new mills to increase foil production 40 million lb annually. Aluminum Co. of America will raise foil output 32 million lb a year. Kaiser, which is constructing a new sheet and foil plant at Ravenswood, W. Va., is rushing plans for a second stage of the mill.

Corporate Tax Relief Outlook Dim

Don't expect more than a meager reduction in corporate taxes in 1956. One member of the tax-writing Senate Finance committee, Sen. Wallace F. Bennett (Rep., Utah) predicts that personal income taxes will be reduced more than $2 billion due to political pressure. But, reports the senator, even if Congress should grant some relief to corporations, it will not come anywhere close to the 5 per cent now scheduled for Apr. 1, 1956.

Look at the Good Jobs, Too

How do you pick operations in your company which can be improved? A Detroit production engineer notes that many companies give most attention to jobs that look inefficient. Often there's more room for improvement in jobs that already look like they're efficient.

Public Works Planning Under Way

The administration is not going to be caught without a public works program. Maj. Gen. John S. Bragdon has been appointed as a special assistant to President Eisenhower to serve as co-ordinator of public works planning. His prime duty: Prepare for the acceleration of public works construction in the event that economic conditions call for such action.

Distribution Practices Probed

Exclusive dealing contracts, price discrimination, delivered pricing, quantity limits, cost justification and brokerage allowances will be examined as the hearings on the antitrust phases of distribution practices get under way

Technical Outlook—p. 67 Market Outlook—p. 91

Aug. 23. The Senate Judiciary Antimonopoly subcommittee, headed by Sen. Harley M. Kilgore (Dem., W. Va.) will be in charge of the proceedings. Efforts will be made to find out whether there is any basic conflict between the Sherman and Robinson-Patman acts, too.

Automate for the Long Pull

The relationship of automation to the machines it serves is coming in for a new look by management. In many cases automation mechanisms and conveyors cost as much or more than the machine tool. While the machine may last for many years, wear in the feeding and positioning mechanisms may soon cause the installation to eat its savings in down time. Be sure your automation is designed to last.

Commerce Grants Highway Aid

While the Senate and House wrangled over federal highway programs calling for the expenditure of billions ($18-25 billion was proposed in various bills), the only help the country may receive for some time comes in the form of an announcement from Sinclair Weeks, secretary of commerce, that $875 million is being apportioned as federal aid to the states for highways. This is the second and last grant under provisions of the Federal-Aid Highway act of 1954. This act authorized a total of $1.9 billion for grants to states and other federal highway projects for the fiscal years beginning July 1, 1955 and 1956. This is the largest two-year sum ever provided for federal highway construction. Some $22.5 million has been granted to the states for national forest highways for the fiscal year of 1957.

Safety Belts for Fleets

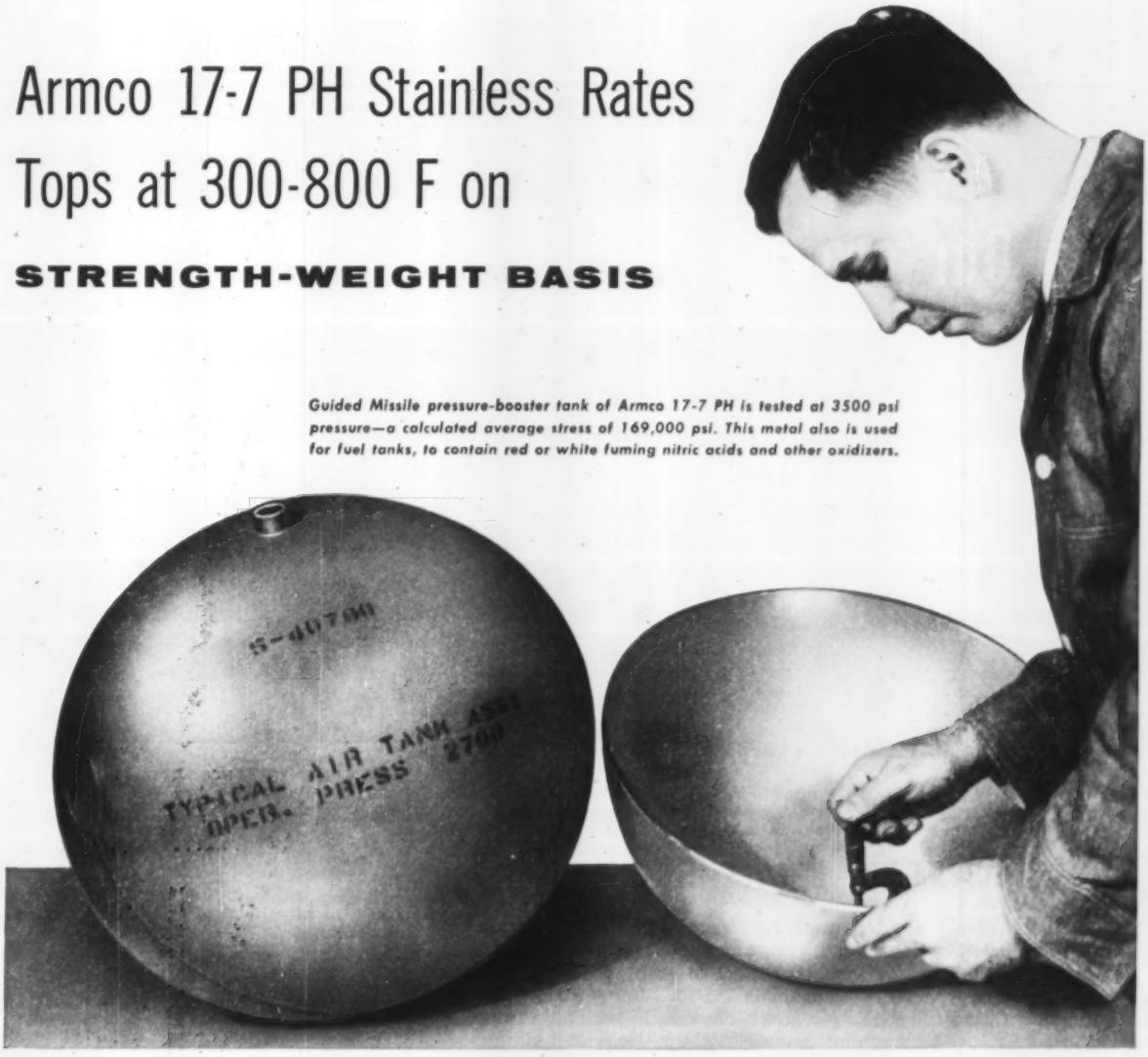
Delta Fire & Casualty Co., an insurance company in Baton Rouge, La., is reducing its rates on cars equipped with safety belts. It cites a two-year record of payments which could have been eliminated had safety belts been used. The moral: Safety belts may be good insurance for executive and fleet cars.

Straws in the Wind

J. C. Udd, president, Strategic Materials Corp., Montreal, claims his firm has a new process for the economic treatment of low-grade manganese ores . . . Freight car shortage continues. The Midwest grain belt is in the acute stage along with Pennsylvania coal mining areas. Some observers look for further tightening next month . . . The Western Pacific railroad expects to begin piggyback service to the Pacific Northwest from San Francisco in conjunction with the Great Northern railway about Sept. 1 . . . And Chicago's oldest steel mill, South Works of U.S. Steel Corp., marked its 75th anniversary Aug. 17.

Armco 17-7 PH Stainless Rates Tops at 300-800 F on

STRENGTH-WEIGHT BASIS



Guided Missile pressure-booster tank of Armco 17-7 PH is tested at 3500 psi pressure—a calculated average stress of 169,000 psi. This metal also is used for fuel tanks, to contain red or white fuming nitric acids and other oxidizers.

On a *strength-weight* basis, Armco 17-7 PH Stainless Steel is unexcelled for service at temperatures of 300 to 800 degrees F. In this temperature range, Armco 17-7 PH has these pound-for-pound characteristics in comparison with the best ferrous and non-ferrous metals:

**UNSURPASSED SHORT-TIME TENSILE STRENGTH*
**SUPERIOR SHORT-TIME YIELD STRENGTH*
**HIGHER STRESS-TO-RUPTURE STRENGTH*
**HIGHER CREEP STRENGTH*

Yet Armco 17-7 PH is not a costly metal. It is well within the stainless steel price range. Besides having fine corrosion resistance, it is readily fabricated and welded in the soft condition—draws and forms much like 18-8 stainless steel. After fabrication, it takes only a low-temperature double heat treatment at 1400 F plus 1050 F to develop its high mechanical properties.

Armco 17-7 PH is supplied in sheets, strip, plates, bars, angles and wire.

For complete data, just fill out and mail the coupon.

Armco Steel Corporation, 1525 Curtis Street, Middletown, Ohio
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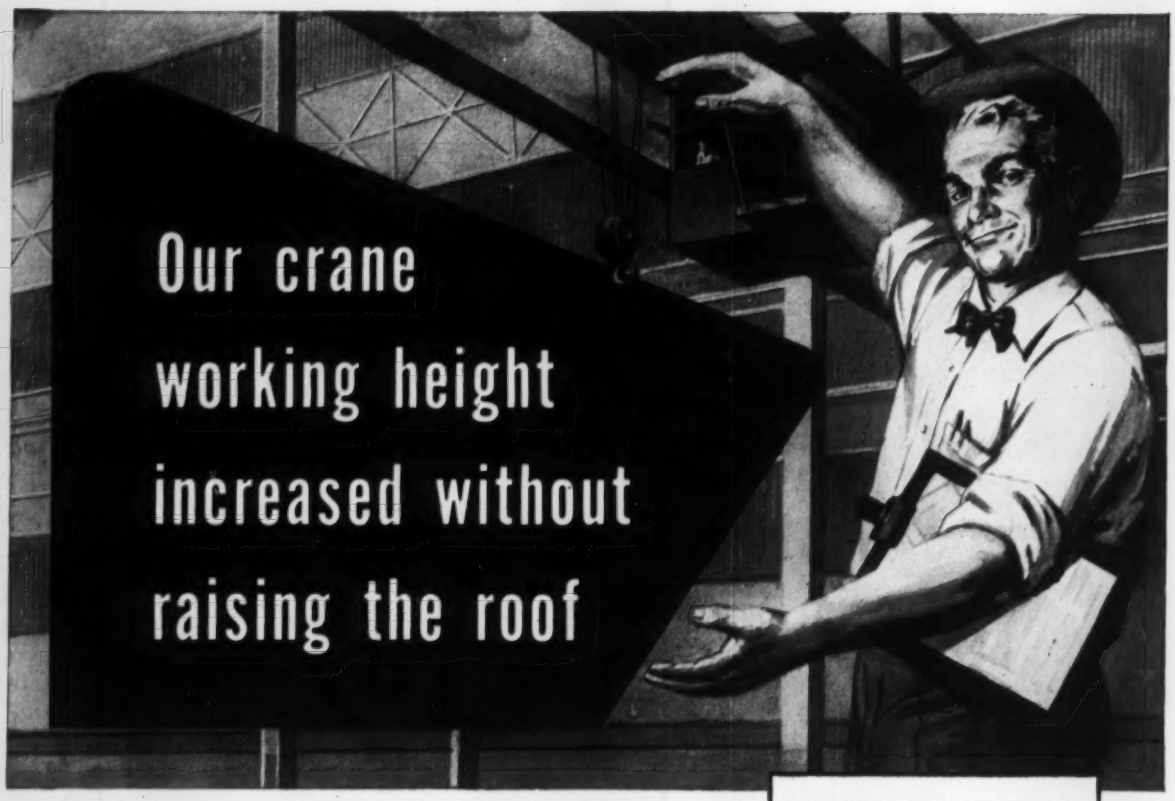
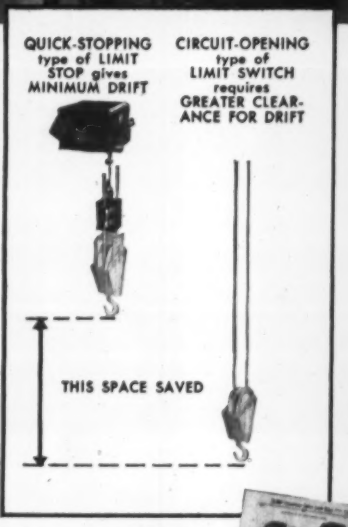


WITH EC&M YOUNGSTOWN SAFETY LIMIT STOPS

"We frequently needed more headroom on our D-c cranes. The limit stop setting couldn't be raised without sacrificing the clearance needed by the hoist-brake to safely stop the fast-moving empty hook, which hoists 2½ to 3 times faster than when hoisting full load. We had a choice . . . we could raise the roof . . . which meant deeper footings, heavier building columns and increased costs for lighting, heating and ventilating . . . OR . . . we could equip our cranes with **quick-stopping** EC&M Youngstown Safety Limit Stops."

Yes, Youngstown Hoist Limit Stops not only disconnect power from the motor but also apply **dynamic braking** to aid the hoist-brake in a **quick stop** . . . giving less drift . . . more headroom. **Safe,** too, because the tripping point does not change . . . is not affected by stretching of the hoist cables. The point at which the rising crane-hook makes contact to lift the Youngstown suspended-weight always remains the same.

For increased D-c crane headroom, **plus safety,** investigate EC&M Youngstown Safety Limit Stops.


QUICK-STOPPING type of LIMIT STOP gives MINIMUM DRIFT
CIRCUIT-OPENING type of LIMIT SWITCH requires GREATER CLEARANCE FOR DRIFT
THIS SPACE SAVED

Write today for Bulletin 1032 which describes and illustrates EC&M Youngstown Limit Stops.

1175

YOU CAN LIFT LOADS HIGHER AND SAFER WITH EC&M YOUNGSTOWN SAFETY LIMIT STOPS

THE ELECTRIC CONTROLLER & MFG. CO.
4498 LEE ROAD ★ CLEVELAND 28, OHIO

30-Hour Week?

Supplementary Unemployment Pay plans becoming effective this year and next are not the end of the road on demands from labor. A look at the record points the way unions are headed.

Many studies have been made on continuity of employment and income for hourly workers. There have been over 300 so-called Guaranteed Annual Wage plans in operation since the war in industries such as food, textiles and clothing.

In metalworking, the Guaranteed Annual Wage has been brought up at the bargaining table for a decade. Not until last year, however, did the unions really start whooping it up for a GAW in steel, aluminum and autos.

In June, Walter Reuther achieved a major victory when he signed up the auto companies for 26 weeks of unemployment pay at 60 to 65 per cent of regular take-home pay, a general wage increase, extra wages for skilled workers, more health insurance, more holiday pay and longer vacations. The term GAW was dropped for just plain SUP.

Last week, some of the sparkle of Mr. Reuther's victory was dimmed by rival David J. McDonald of the United Steelworkers. Mr. McDonald could boast a dual victory: He had obtained from American Can and Continental Can terms calling for 65 per cent of take-home pay for 52 weeks, plus wage raises and other benefits. He could boast that he had breached the solid front of companies with steelworkers' unions on unemployment compensation, that he will be out to get the same terms from Big Steel next spring.

Supplementary Unemployment Pay plans concluded so far lack uniformity and have not been intermeshed with state unemployment plans. The 1400 companies with United Steelworkers contracts can expect plenty of haggling over specific terms as a more precise pattern evolves.

But a refined SUP is not the end of the road. In discussing compensation in STEEL last year, McDonald, tipped his hand by saying: "Perhaps we are also confronted with the necessity for a reduced work day with maintenance of wage income."

In the next few years there may be a campaign for a 6-hour day and a 30-hour week for 40 hours of pay.

Preparation for this new drive should be part of your planning—just in case!

Irwin H. Such

EDITOR

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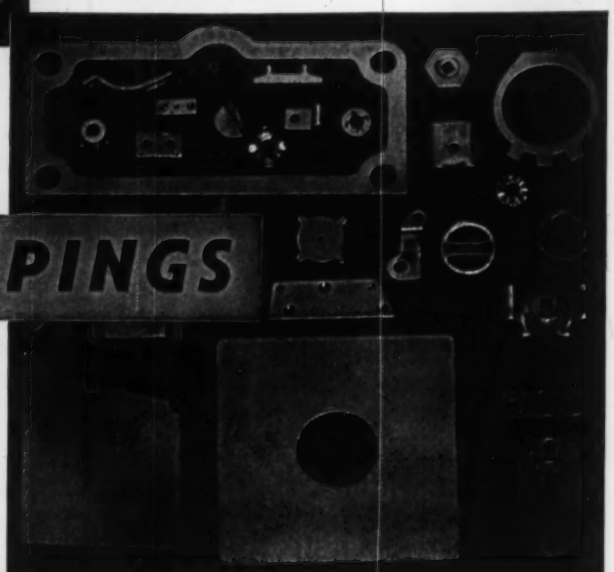

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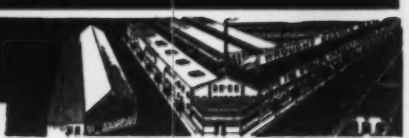

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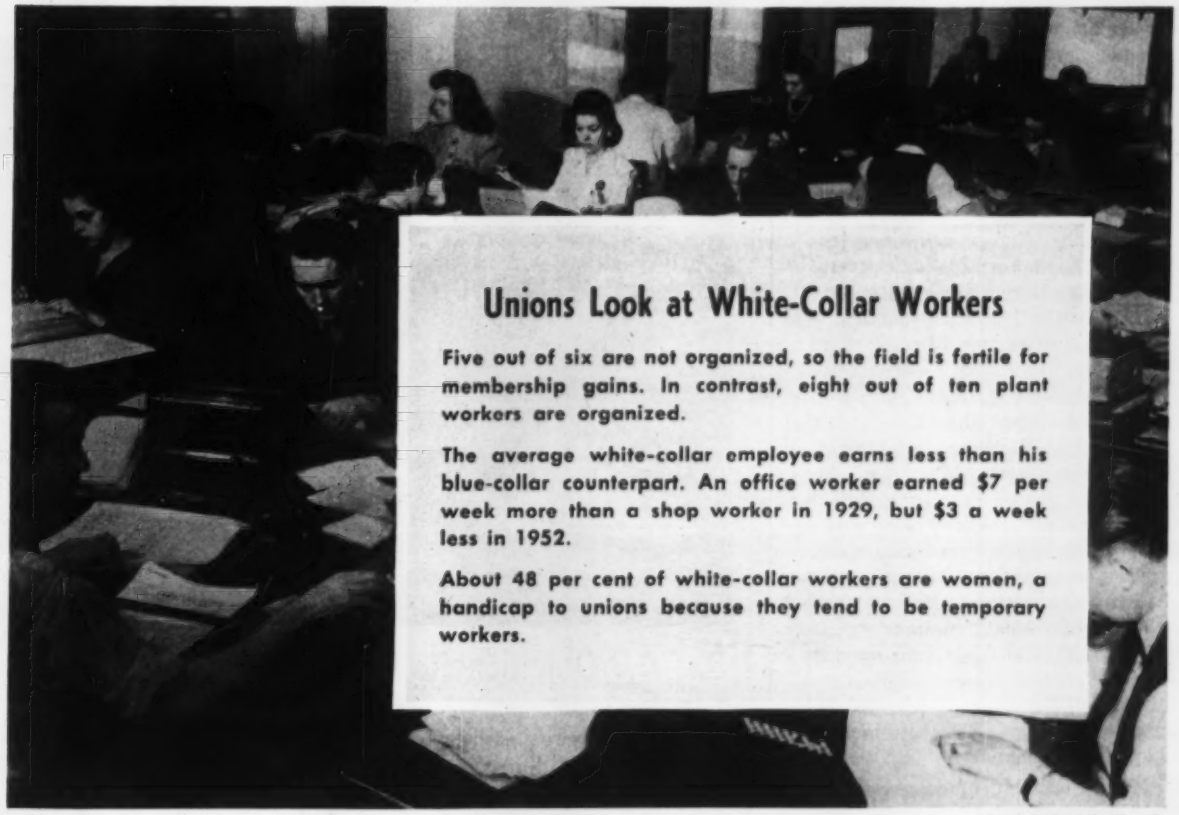


American Steel & Wire Co.

Unions Look at White-Collar Workers

Five out of six are not organized, so the field is fertile for membership gains. In contrast, eight out of ten plant workers are organized.

The average white-collar employee earns less than his blue-collar counterpart. An office worker earned $7 per week more than a shop worker in 1929, but $3 a week less in 1952.

About 48 per cent of white-collar workers are women, a handicap to unions because they tend to be temporary workers.

Office Workers: Major Target for Unions

SUSAN WHITEBLOUSE: 50, widowed 11 years ago, no children, file clerk in Detroit manufacturing plant.

Susan worried about holding on to her job so much it affected her work. The danger of losing her position looked increasingly real. The CIO used her plight as a wedge to move in and unionize the office workers.

Batting Average—Walter Reuther's CIO Office Workers Department has been capitalizing on incidents like that. Since it was founded in 1951, it has won 61 out 77 organizational elections. While less than 2 million of the nation's 16 million white-collar workers are members of labor unions, organizational pressure on them is growing. It will increase. Recruiting the office worker will be a major objective of the new AFL and CIO.

Unions hold two trump cards. 1. Since the white-collar movement was pioneered in 1918 by the AFL International Federation of Technical Engineers, office work has become more routine. 2. White-collar workers are becoming an ever larger part of the American labor force.

Growth — As recently as ten years ago there were only about 10 million of them; they were less than 25 per cent of the employed workers in the country. Today, they make up almost 30 per cent of the work force. American labor is increasingly aware of the need to keep up with the growth. Perhaps, too, unions view white-collar organization as a way to add more dignity to the labor movement.

To enhance its own dignity, the CIO points out in a leaflet: "Your doctor has his union . . . with the aid of local chapters, the American Medical Association sets the working conditions of doctors. Some claim it is the best closed shop in America." Another paragraph cites the American Bar Association "as the lawyers' agent to establish requirements and conditions for their work."

Argument — As a final bombshell, the union notes: "Your employer has a union . . . (employers) subscribe to the potent associations that lobby for their interests . . . and set standards that reflect in their take-away pay. For years, employers have been united under the banners of the U.S. Chamber of Commerce, the National Association of Manufacturers, etc."

In their organizational sales talk, union men couple their pitch about improved wages and working conditions with emphasis on protection of professional standards, dignity and the establish-

ment of promotional systems based on merit rather than favoritism. They stress the security brought by seniority, and they point to the number of their members promoted to management posts. In short, unions try to minimize the feeling that belonging to a union is socially inferior.

Brass Tacks — Unions use the basic tactics employed on production people—find a grievance, recruit a hard core of supporters, search for other arguments that will sway the less enthusiastic.

Grievances among office workers are as numerous as those among factory people, points out Bob Shebal, assistant director of the CIO's Office Workers Department. One sweet young thing was disgruntled because she was called upon regularly to baby sit for the boss's wife on bridge days. Four girls were unhappy because they had to assume the duties of a fifth who quit. Most common complaints: Workers have no specific duties; employees are shifted to higher skilled jobs with no increase in pay; office automation displaces personnel.

Money is a big union argument, particularly in the lower and low-middle areas of office workers where most of the pressure is coming. Average salaries of white-collar workers have gone up only about 92 per cent since 1939, compared with a 170-per-cent gain for the blue-collar boys in the shop.

Exception — While most unionization pressure is coming in lower ranks of office people, there's one exception — engineers. The most controversial in the professional union field is the Engineers & Scientists of America. Claiming 40,000 members in legally recognized bargaining units predominantly in the aircraft and electrical industries, ESA frequently is in the labor news with strikes like the recent one at Minneapolis-Honeywell Regulator Co. It netted an 8 to 10 per cent salary increase and other changes.

Formed three years ago by merging 14 independent plant engineer unions, ESA thrives best in industries with large numbers of engineers. At Sperry Gyroscope Co., for example, where ESA is strong, 3600 of the company's 16,000 employees are engineers. Boeing Aircraft Co. has more than 5000 engineers in its plants. In facilities like these, the ratio of engineers to production workers is often 1 to 5 rather than the normal 1 to 50.

That often means that hundreds of engineers are clustered together at drawing boards in a single room. While massing engineers may be a practical working arrangement, it isn't a setup calculated to enhance an engineer's sense of individuality or professionalism. After being warmly prepared for a part in management in college and wooed with plenty of job offers upon graduation, it's little wonder engineers turn to unions for collective security and part of the status mass employment has helped erode away.

Magnet — Engineering society surveys show, however, that it isn't always the younger engineers who flock to unions. Spurred by a trend toward salary leveling, men 15 or 20 years out of school often jump on the bandwagon despite the fact that unionism has a sinister connotation.

Groups like the National Society of Professional Engineers, whose interest is the engineering profession and not unionism, frankly admit that there is a need for something to be done. Some of its members suspect a germ of truth in a remark made some 20 years ago by Matthew Woll, vice president of the AFL: "The trouble with you engineers is that you fancy yourselves as professional men. Actually, you are just hired help."

Findings—A survey by NSPE, covering more than 1300 engineers employed in all fields, plus more than 200 companies, revealed: The typical engineer is 35, has worked for his present employer, a large

Objections to Engineering Union

1. Management engineers are set against engineering engineers.
2. Union methods, strikes, coercion, picketing, closed shop, etc. should be unthinkable in a profession.
3. Union interests of individuals are incompatible with the public interest usually associated with a profession.

4. Unionization emphasizes wages and hours instead of qualifications and quality of service.
5. Unionization tends to pull all members of a profession down to the same level, discouraging individual effort, loyalty and ambition.
6. Unionization is identified with the trades and will cause the public to think of engineering as a trade rather than as a profession.

Union Proponents Answer

1. Union may mean something sinister because of actions of the labor unions over the years, but *union* in the sense of that formed by our forefathers need not.
2. Professionals who have banded together for collective bargaining need not necessarily follow the labor union line.
3. The objective of engineering union is to deal with management on a rational, fair, co-operative, ethical and professional level.
4. Striking for what is right is protected under law whether a man is professional or not.

What Engineers Demand

1. Employer payment of professional society dues.
2. Paid time off to attend meetings of professional engineering societies.
3. Tuition refunds on advanced college work while employed.
4. Education and professional leaves of absence.
5. Setting of professional standards of competence required for specific job.

manufacturer, for six years, is one of more than 200 members of the firm's engineering force and supervises five other persons. He likes his work but is inclined to be unhappy about his salary and his chances for advancement. He does not know quite how he stands with his company, and he feels it is not making as effective use of his training and abilities as it could. He wants recognition as a professional and does not think he is getting it to the degree that he should.

It is precisely on this point of professional status that the NSPE disagrees with the ESA. NSPE spokesmen believe that any organization set up to bargain for its members must act like a union if its demands are turned down by management. That means strikes if the support of the engineering members is to be held.

Profession—NSPE believes that professional status is something granted by the public through recognition, identification and respect for learning and service. It sees the strike as a threat to professional status.

Although ESA operates pretty much like any other union, part of its strength comes from the fact that it is not formally tied to any major labor organization. Engineers prefer a separate organization that seems more like a professional association than a union however it may act. In a measure this is due to the professional status question, but also to the fact that many prefer to hold open the door to possible management rank—which open unionism might mitigate against.

Potential—It's certain that engineers who make the grade have a good potential in management jobs. A recent survey of 900 top executives disclosed that 45.5 per cent had a major educational background in science or engineering. An estimated 40 per cent of all industrial executives are engineers, and 60 per cent of engineers are in administrative functions 20 years after graduation.

Perhaps because of advancement possibilities, about two-thirds of engineers polled oppose collective bargaining.

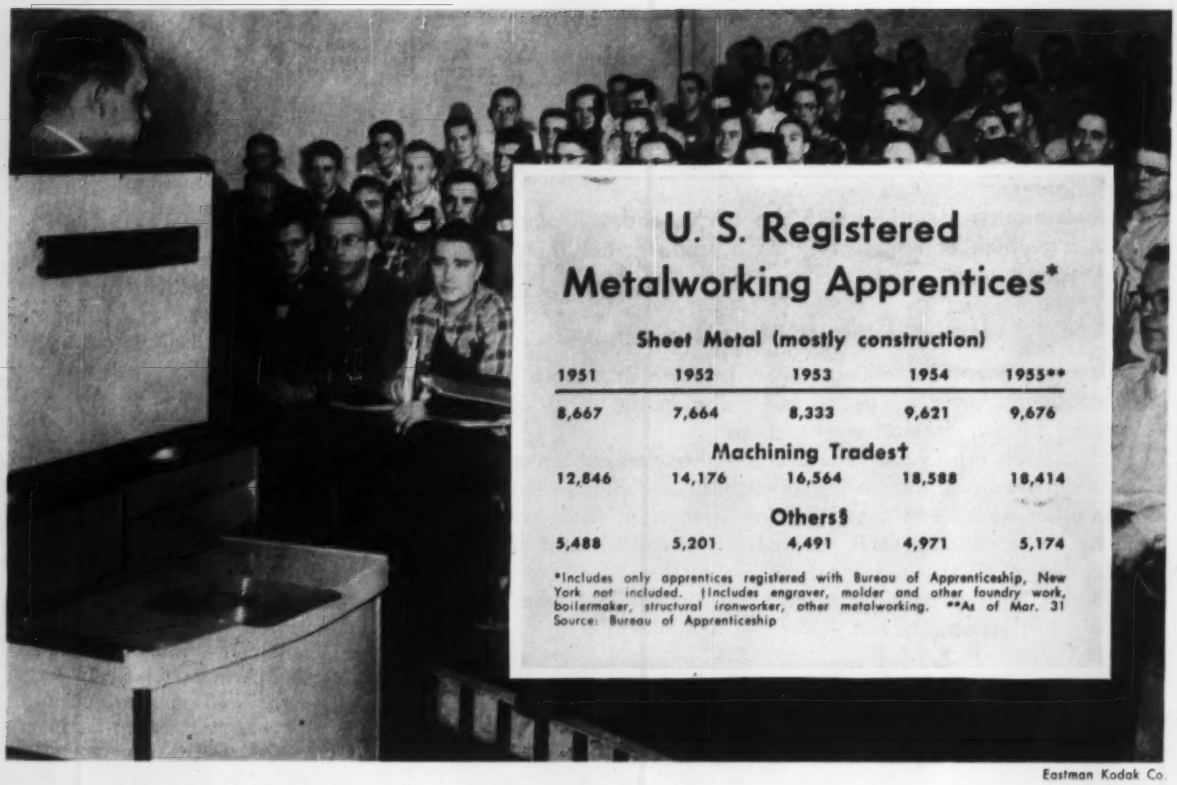
Agreement—The one thing nobody seems to disagree on is that in many companies the white collar has become frayed. Not only among office employees but also among groups like the engineers, there is a vast discrepancy between the management identification they feel entitled to and their day-to-day status. It is this situation which has helped the white-collar unions most. To avoid unionization, it is this situation which companies must correct.

If your firm is relatively large, you might well give attention to the plan adopted among engineers at General Electric Co.

Purpose—Formed by a group of engineers back in 1938, the General Electric Engineers Association is intended to act as a voice for the engineers as a group, promote more efficient engineering effort, help engineers make better use of company facilities and in general promote engineering-management understanding. It does not negotiate or bargain. But, for example, should older engineers as a group feel that younger men are being favored salarywise, a review of the situation with management is called.

The position of the association is one of a friendly observer, counselor and adviser to the company on the problems of engineers and engineering management. It provides a voice for the engineers in General Electric. It contributes rather than demands and appears to enhance the professional status of its members. Both General Electric and the engineers feel they gain by having it.

You might be wise to assist in the formation of such a group in your plant. White-collar channels of communication must be open at the conference table. Otherwise, the alternative one of these days may be the bargaining table.



U. S. Registered Metalworking Apprentices*

Sheet Metal (mostly construction)

1951	1952	1953	1954	1955**
8,667	7,664	8,333	9,621	9,676

Machining Trades†

12,846	14,176	16,564	18,588	18,414

Others§

5,488	5,201	4,491	4,971	5,174

*Includes only apprentices registered with Bureau of Apprenticeship, New York not included. †Includes engraver, molder and other foundry work, boilermaker, structural ironworker, other metalworking. **As of Mar. 31
Source: Bureau of Apprenticeship

Eastman Kodak Co.

Are You Building a Skilled Help Pool?

"THE SLUMP in apprentice training caused by the Korean War has been stopped, and we are unquestionably in a steady upswing," says W. F. Patterson, director, Bureau of Apprenticeship.

It's no spectacular climb (see chart). But it's an indication that industry is beginning to do something about filling its need for skilled help. In 20 years three to four times more skilled workers than we have will be needed.

Lagging—Current rates of apprentice training are woefully inadequate. To maintain the skilled worker pool at its present level would call for about a fourfold increase in the number of apprentices in training, according to reliable estimates.

Many companies are leery of starting an apprentice program. H. Harig, president, Harig Mfg. Corp., Chicago, says this: "Complaints we hear . . . it costs too much, the boys quit, we can't get enough good boys . . . are all due to management's not taking enough interest in the problem and not setting up a good apprentice program."

Benefits—Almost half the firm's 100 men are out of its training setup. Mr. Harig points to these benefits: You can develop skills to best suit your needs. You will be building your own supervisory and engineering talent, plus developing replacements for old timers. Your efficiency will go up—the men you train will be familiar with methods that give you the most production.

Associated Industries of Cleveland reports typical programs in that area run about 8000 hours, or four years. Starting rates range from $1.26 to $1.83 an hour—indicating that employers don't want apprentices to be lured away by temporarily high paying, but "low future" jobs.

Incentive — Increases generally come along after each 1000 hours of work or annually. In the last stages, wages come close to journeymen's. Some companies pay bonuses up to $500 at the completion of the course—an added incentive to finish.

Estimates are that an apprentice begins to pay his own way in about one and a half to two years.

Interest — Some trade associations are active in sponsoring apprenticeship. The National Tool & Die Manufacturers Association has a program with tips on how to select apprentices, related instruction (subjects hard to teach on the job such as math, blueprint reading, tool theory) and recommendations on apprenticeship standards. A campaign is underway to work through local groups of the association to stimulate added interest.

Many patternmakers are active in apprentice training. Leaders in the foundry industry recently got

together to talk over the subject. Bureau of Apprenticeship officials strongly feel more such industry-wide activity is the key to expansion of apprentice training.

A bureau booklet, "Setting Up an Apprenticeship Program," outlines how to get started. More information can be obtained by checking firms in your area that have programs. Bureau personnel also tailor a program for your needs.

Making Managers

Systematic program is the key to the development of a top-flight management team

ORGANIZED management development programs are gaining.

Of 460 representative companies surveyed by the American Management Association, 88 per cent say that they are giving regular atttention to the problem. Fifty-four per cent report a systematic program and 21 per cent have no formal plan but designate men to guide management development.

Methods — Approaches vary a good deal. Conferences and group discussions, coaching by immediate superiors and periodic reviews and audits of performance are among the most popular. About a third of the companies use one or more of these methods.

Nearly a fifth of those with programs and 16 per cent of those without them lean heavily on psychological testing. Some use psychological counseling of supervisory and managerial employees.

How It's Done — Other techniques reported: Incompany training courses; regular attendance of conferences and technical meetings at company expense; planned job rotation; paid memberships in professional or technical societies; university and other "outside" management courses; special trainee positions; films and slides; assignments to committees, special projects, surveys, etc.; case-problem studies; assigned or optional outside reading or study; "junior board" or multiple-management plans; small-group discussions; training by outside consultants or specialists; planned visits to other companies; workshops; panels; role-playing sessions; and forums.

Annual SUP Gets Foothold

Wage boosts and first 52-week Supplemental Unemployment Pay plan are written into contract with United Steelworkers at American and Continental Can

STEELWORKERS have set the stage for their 1956 contract demands with primary steel producers and fabricators.

The union assured itself a strong bargaining position in next year's negotiations by gaining 52 weeks of Supplementary Unemployment Pay from American Can Co. and Continental Can Co.

As contracts expire, it is anticipated that David J. McDonald, union president, will press for the same terms in some 2000 contracts affecting 1.2 million workers in 1300 to 1400 companies.

Best Yet—American and Continental signed a two-year contract which provides a package of 21.5 cents an hour. The SUP included will provide workers with 65 per cent of their take-home pay for 52 weeks. This includes state benefits. Workers must have minimum seniority of three years to qualify.

Company contributions will cover the entire program, amounting to 5 cents an hour per worker. The agreement, which gives an average increase of 13 cents an hour, plus increment increases in job classifications, affects 20,000 employees and 32 plants of American Can and 15,000 workers in some 30 plants of Continental Can.

Basic differences between the auto settlement and the can industry agreement: 1. Supplementary unemployment will continue for 52 weeks, opposed to 26 weeks for the autoworkers. 2. Continental and American Can workers will receive 65 per cent of their take-home pay, while auto employees will wait one week, take home 65 per cent for four weeks, then drop to 60 per cent for 22 weeks. 3. The operation of the plan (steelworkers) is not dependent on approval by or the co-operation of state unemployment compensation authorities. If any state does not approve, supplemental benefits will be paid at the end of the period of unemployment or when state benefits are exhausted.

Statistics—A single worker will receive about $45 a week under the steelworkers SUP, while an employee with dependents will get some $49. Benefits for an employee with average wages and four dependents will run some $53 a week. The period for which the benefit will be paid will be dependent upon the credit units of each employee at the time of layoff. Highest seniority employees will have credit for 52 weeks, beginning Oct. 1, 1956.

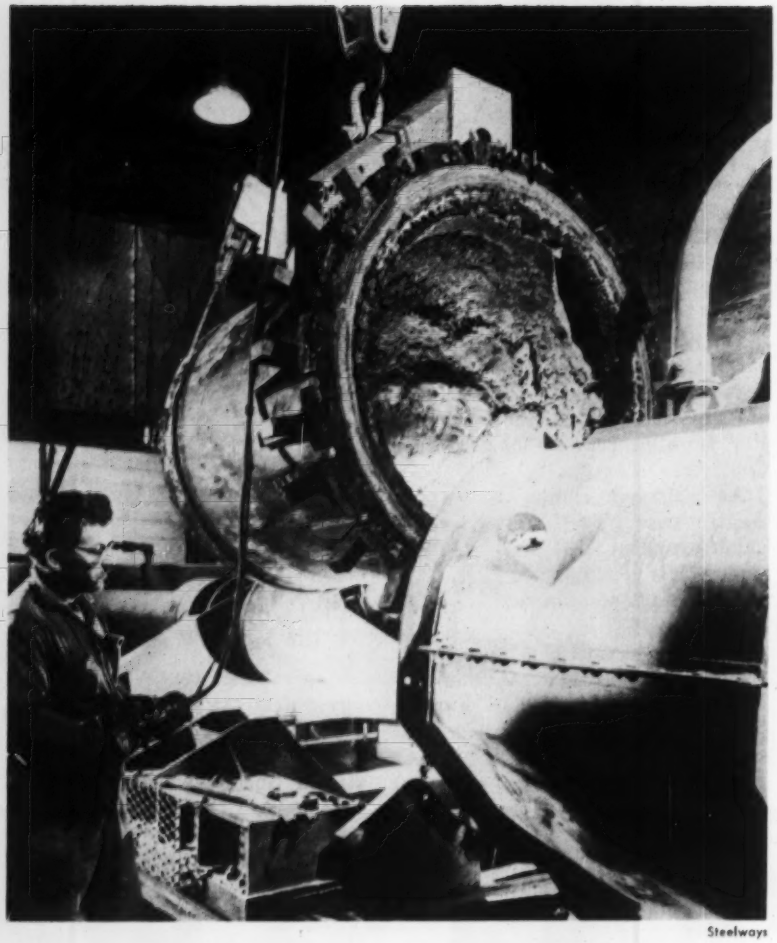
GE, IUE Sign; No SUP

General Electric Co. and the International Union of Electrical Workers (IUE) have negotiated a five-year contract—without Supplental Unemployment Pay.

Claiming to represent 100,000 of GE's 220,000 workers, the union settled for a raise which is slightly over 3 per cent for each year of the contract. James B. Carey, IUE president, hailed the agreement as a "splendid settlement" and said it will provide pay raises of 33-34 cents an hour by the end of the fifth year. "This is the highest monetary settlement ever negotiated between the IUE and General Electric in one contract," reports the union boss.

When contract negotiations opened July 19, IUE said a "full Guaranteed Annual Wage" was its main objective. Result: GE has agreed to discuss SUP for a 30-day period in 1958.

Other benefits included in the new contract: 1. Pension contributions of workers have been reduced from 2 to 1 per cent. GE will make up the difference. 2. Disability pay will be increased from a maximum of $40 a week for 26 weeks to $85 a week. 3. A cost-of-living escalator clause, to be computed quarterly, is included in the new pact. The union also reports gains in life and health insurance, hospital coverage and sick and disability benefits.



Steelways

A reaction vessel, full of sponge titanium, will be melted into ingots

Coming: Titanium Sheet

THE NAVY, representing the Armed Services, is seeking titanium alloy sheet. To get it, a contracting program is being worked out.

Contracts will be placed with leading producers who will work out techniques for making different compositions. Findings of recent laboratory research will guide them.

Alloys Needed—In most cases, the wonder metal will be alloyed with aluminum, molybdenum, vanadium or a combination of the three. It is anticipated that compositions will have high strength at elevated temperatures and meet requirements for operations like welding, forming and heat treating.

The over-all program was laid out by the Department of Defense Steering Group on Titanium Research and Development, which is headed by John H. Garrett.

First thing being tackled is the No. 1 stumbling block: Delayed cracking of formed parts made from conventional titanium sheet which contains 8 per cent manganese. This assignment has been given to Battelle Memorial Institute, along with a contract for a five-year program to study all problems that have been plaguing titanium producers and consumers.

Future Steps—Other steps: 1. As soon as mills have the new sheets ready, they will be shipped to testing laboratories to develop complete engineering data. 2. Then the material will be made available to airframe and engine manufacturers, so that they can find out how they can use it. Primary producers involved include Rem-Cru Titanium Inc., Mallory-Sharon Titanium Corp., Republic Steel Corp. and Titanium Metals Corp.

Titanium fasteners are being tested, too. Evidence indicates that failures stem from improper heat treating. With that obstacle out of the way, fasteners are expected to meet service conditions satisfactorily.

Advance Step—Another contemplated project: The forging of bars and billets to assure that most of the trouble with titanium forgings in airframe and airplane engines is eliminated. Reports from engine builders indicate that little difficulty is being experienced with titanium forgings.

A factor which will affect the titanium program is the recent introduction of new steel alloys with tensile strengths running as high as 200,000 psi. They retain their strength at well over 700°F. Some of this material is being specified by designers for use in airframe skin and structural members.

Ready Cash for Metalworking

More metalworking firms are using commercial financing to get cash for jigs and dies, maintain supply parts inventories, replace obsolete machinery and do research and planning.

Walter E. Heller Co., Chicago, a commercial financing firm, reports that business has increased almost 14 per cent since last year. It notes an increasing trend toward "accounts receivable" financing among metalworking companies.

Explains Mr. Heller: "In accounts receivable financing, a company's open accounts are pledged to the lender in return for cash. The borrower repays the lender as his receivables are collected. In practice, the company sends its invoices to the financing house, which sends the company the face value of the invoices less an agreed reserve."

205 Airport Grants for '56

Spending of $40 million to increase the safety and efficiency of

aviation operations is planned for next year. Under the federal-aid airport program $20 million is allocated from Department of Commerce funds; this amount is matched by local governments.

Sinclair Weeks, secretary of commerce, points out that this sum does not include any of the $42.5 million authorized in the new airport bill approved by the President on Aug. 3. Programming of the $42.5 million will be deferred about 90 days to permit filing of revised project applications based on long-range development plans.

AFL Charges Unfair Tactics

Financial subsidies that lure plants to southern states rub the American Federation of Labor the wrong way. It claims: The result is an artificially induced industrial migration—one that leaves a blight in the abandoned communities in the North and does not constitute an essential element in the healthy industrial growth of the South.

The AFL points to the expansion of automotive, steel and other hard goods industries in the South as growth based on sound economic reasons—an expanding market, abundant raw materials, cheap power, climate and the availability of transportation facilities and building sites.

What the AFL objects to is the moving of apparel, furniture, textile and other companies because of inducements of free plants, low rent, tax concessions or low wage and labor standards.

Needed, says the AFL, is legislation to eliminate certain subsidies and reduce (and gradually eliminate) differences in wage rates and labor standards among states.

AFL legislation would:

Remove tax exemptions from municipal bonds issued to finance construction.

Prohibit businessmen from gaining a tax advantage from subsidized rents.

Boost the federal minimum wage to $1.25 an hour.

Give the secretary of labor power to set minimum wage levels on an industry-wide basis.

Establish a uniform, national system of unemployment compensation.

Cleveland Wire Cloth & Mfg. Co.

Big Sales in Small Holes

WIRE CLOTH is termed an "obscure necessity." Yet over 300 industries buy about $25 million worth of it a year.

Producers of industrial wire cloth are divided into two groups: Manufacturers and wire workers. In this country about 75 manufacturers operate power looms. Their markets are nationwide. Innumerable wire workers serve local areas with bench-made (hand woven) wire mesh.

Uses, Uses, Uses—Big uses of wire cloth are in sizing, filtering and dewatering. It's used in grading or sizing mineral ores, coal, limestone, gravel, crushed stone and cement. It's used in making chemicals, paints, varnish, abrasives, flour, salt, sugar and rice. It is an important factor in cracking high octane gasoline; it forms components for automobiles, airplanes, television and radar tubes; on the farm it's used in threshers, reapers, corn shellers and other harvesting, cleaning and grading equipment. Tobacco is screened, so is blood plasma.

The multitude of uses has its effect on the industry. Sales are stable; they closely follow the economy as a whole. Considerable specialization and service are featured by the industry. Wire cloth is made in over 10,000 different types, sizes, weaves and metals. A significant and increasing portion is fabricated or cut to size.

Production ranges from space screens with openings 4-in. square to fine wire cloth with 160,000 openings per square inch.

No. 1 Problem—Imports of fine mesh wire cloth (91 and finer) are taking 30 per cent of the market. In 1949, they got 5 per cent, then jumped to 15 per cent in 1950. There is a 25 per cent tariff on some grades of mesh, but one Midwest maker says even a 50 per cent tariff wouldn't help. "We're really hurting, mostly from German products; they have a 50-cent labor rate compared with our $2.20. Practically any jet you see overhead has a German filter in it because we can't compete pricewise."

Some of the domestic manufacturers are looking for tariff relief to assure production facilities in time of emergency. Makers of the coarser grades are not too concerned; they even do some exporting.

By E. C. KREUTZBERG *Washington Editor*

Fast Tax Write-Offs Stall

WILL U. S. industrial growth begin to slow as the government fast tax write-off program grinds to a halt? The Office of Defense Mobilization is taking steps to curtail drastically the use of the certificate of necessity.

Out of 225 expansion goals established, only 20 remain open. In its most recent move, ODM closed 19 (barite, beryl, lead, molybdenum, tungsten, etc.) and suspended 38 others.

Included in the suspended list are aircraft, airport and aluminum forging facilities, electric power, freight cars, iron ore, locomotives, port facilities, railroad passenger cars, etc.

Future Action—Arthur S. Flemming, ODM director, states that the 20 expansion goals still open also will be subject to review. He empasizes that they are being kept open because of their direct defense relationship. The table of open goals lists such items as copper, heavy aluminum aircraft forgings, heavy steel plates, nickel, steam boilers, steel castings, etc.

History—The quick tax write-off allowance from the government permits a company to deduct the cost of new plants and equipment from its taxable income at a faster-than-normal rate. It has the effect of cutting the firm's income tax payment during the early years of its operation of a new facility. Secretary of the Treasury George M. Humphrey, who has been calling for sharp reductions in the program, estimates that the fast tax write-offs will cost the U. S. some $800 million during the current fiscal year.

"To use the rapid write-off as an indirect subsidy means that the stimulants are applied by men not by law," states the treasury boss.

Foreign Trade Spurred

American manufacturers, interested in foreign trade, will have a big stake in the October Conference of Foreign Ministers to be held in Geneva. Springing in part from President Eisenhower's declaration at the Summit meeting—"peaceful trade" should be encouraged — foreign ministers have a directive "to study the progressive elimination of barriers to communication and peaceful trade" between East and West. While there is no clear-cut definition of the types of items the Chief Executive had in mind, it is felt that the extent of trade (including industrial equipment) will be determined by Russia's willingness to make concessions on vital issues.

What Price Automation?

The Joint Committee on the Economic report has set Oct. 11-28 for an investigation of automation by its subcommittee on Economic Stabilization. Rep. Wright Patman (Dem., Tex.) is chairman and also heads the House Small Business committee. The investigation will be directed by the subcommittee's economist, W. H. Moore. He plans to call witnesses who will provide case studies. Questions to be answered: What are the problems and economic effects of automation? What does automation do to the employment picture?

DOD: Out of Competition

Another move is being made by the Defense department to get out of direct competition with private business.

Picking a strategic time, DOD has submitted a list of 14 business activities (which it proposes to "kill off") to the House and Senate Appropriations committees. This is in accord with the controversial Section 638 of the Senate Appropriations act for fiscal 1956, which gives the House and Senate Appropriations committees an opportunity to veto such discontinuance by DOD. Chairman Clarence Cannon (Dem., Mo.) of the House committee says that he doubts if either the House or Senate will be able to get enough members back to Washington to take a vote within the 90-day deadline. This would give automatic approval to DOD. Included in the list are four coffee roasting facilities, two paint manufacturing plants, five cobbler shops, one dry cleaning and one ropewalk plant. Future lists may have rougher sledding when Congressmen return for the next session of Congress after hearing from constituents who may be forced to look for new jobs when DOD slashes more business activities.

The First Morgan
Continuous Rolling Mill

The First Successful U. S. Continuous Rod Mill was built in 1888 by MORGAN WORCESTER

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- Continuous Mill—Twist Guides
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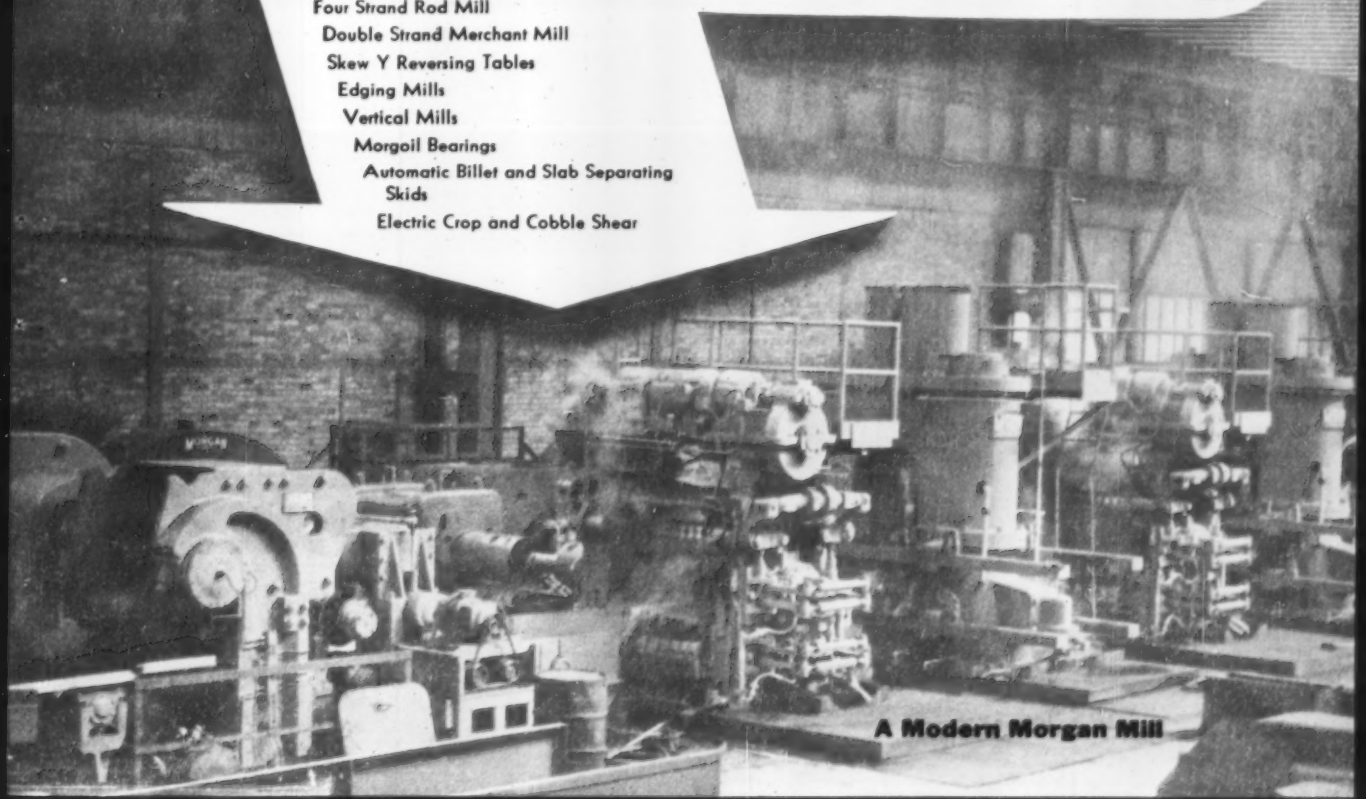
- Continuous Billet Heating Furnace
- Hydraulic Flying Shear
- Steam Flying Shears
- Up and Down Cut Flying Shear
- Duo-Finishing Mill
- Escapement Type Cooling Bed
- Universal Type Cooling Bed
- Carry-over Type Cooling Bed
- Automatic Pack Annealing on Cooling Bed
- Four Strand Rod Mill
- Double Strand Merchant Mill
- Skew Y Reversing Tables
- Edging Mills
- Vertical Mills
- Morgoil Bearings
- Automatic Billet and Slab Separating Skids
- Electric Crop and Cobble Shear



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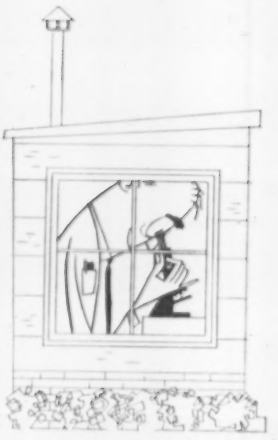


Crawford: 'Small-Firm Research Pays'

MOST SMALL businesses view research as an expense too rich for their blood.

But to William F. Crawford, president of Edward Valves Inc., East Chicago, Ind., it helps his company remain competitive and maintain one of the better profit margins in the industry. A subsidiary of Rockwell Mfg. Co., it employs fewer than 500, yet boasts the industry's largest laboratory devoted exclusively to steel valve research.

What's the Key?—"We combine production, engineering and research," says Mr. Crawford. "When you have a relatively small plant and can't afford specialists for every problem that comes along, you have to try to make your line and staff personnel be many things to all departments."

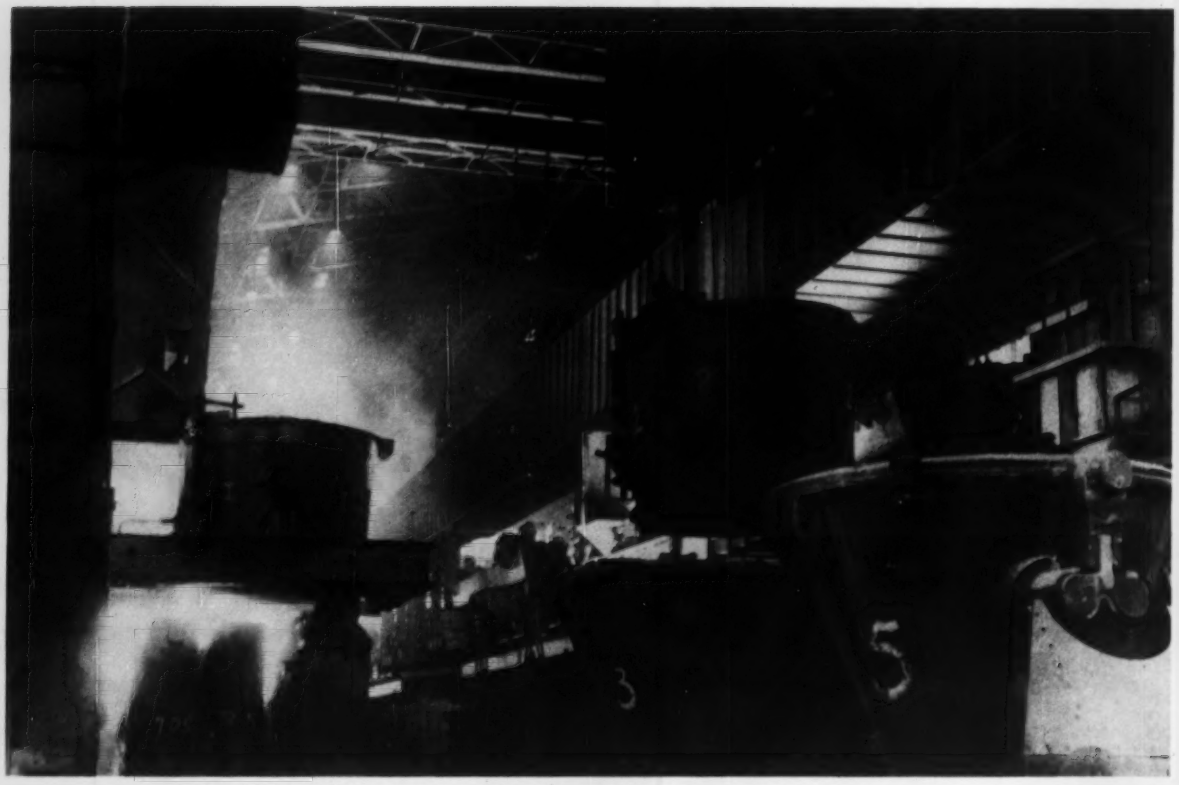
For Edward Valves, a training program plus planned rotation of assignments provides the solution. Men come to the company as design or process engineers, physicists, radiologists or chemists. After a few years, they gain a broad background in many phases of valve development, production and field operating needs.

Back to School—An example of the training program is the course in nuclear physics recently completed at Edward Valves. Sessions were held several times a month for eight months, with personnel voluntarily attending on their own time. Conference-type classes are conducted primarily by company men, although outside experts are called in. Specializing in high temperature, high pressure valves, the company is doing research on valves for nuclear applications.

"An important factor in doing your own research," Mr. Crawford points out: "Seldom do you get a report on failures when research is done by an outside firm. It normally reports only the successful route taken to achieve the end result. Properly documented failures experienced in research provide good background and save you time and money on future projects —and they help broaden new personnel."

Competitive Angle — Obviously, Edward Valves' production-engineering-research program wouldn't pay off if it operated strictly in the standard, mass-produced line of valves. "But when you have a good mix—both standards and specials, plus carefully conceived new products —then intensive product research pays off when your industry is highly competitive. When your markets are chiefly growth industries, such as power generation, petroleum and chemicals, broad research will help you keep pace," Mr. Crawford emphasizes.

That's the reason Edward Valves has a program to more than double research space.



The tapping side of the furnaces in the new Appleby-Frodingham melting shop

Report on Europe: Back from a six-week tour of West Europe, *STEEL's* editor, Irwin H. Such, reports his findings in this and succeeding articles.

Rebuilding British Steel

BRITAIN'S big steel company, Stewarts & Lloyds Ltd., has been back in private hands for 14 months. Holders of its ten million ordinary shares are happy about the way things are working out.

They paid $4.90 a share and already have made a handsome profit—cause for elation in a country with stiff income taxes but none on capital gains.

Freedom? — Stewarts & Lloyds was one of the first companies resold after denationalization in 1953. The government has since disposed of two dozen companies, accounting for about 65 per cent of capacity. They include United Steel Companies, Lancashire Steel Corp., John Summers & Sons Ltd., Whitehead Iron & Steel Co., Colvilles Ltd. and English Steel Co.

But the industry is still far from shaping its own destinies. The British Iron & Steel Board, created by the 1953 act, is charged with "exercising general supervision." In practice, "supervision" amounts to strong-arm control. A company cannot spend more than $280,000 on improvements without approval. If the board thinks a new facility is needed—a continuous strip mill, for instance—it can order one built. It also is empowered to set maximum prices.

Control—In 1954, the industry was permitted to raise prices only 3 per cent. Another 5 per cent hike was legalized on July 25. Selling price ceilings are based on these production costs: Metallic content, 30 per cent; other materials, repairs and maintenance, 13 per cent; coal, coke, oil and electric power, 20 per cent; wages and salaries, 21 per cent; inland transportation, 10 per cent; and depreciation and obsolescence of fixed assets, 6 per cent.

The board adds in a fair profit in determining selling prices. Maximum prices do not apply to exports. Steel companies have free sailing on the 15 per cent of their business done abroad.

Plus Side—The board is spearheading a rehabilitation and expansion program. By 1958, it plans to up ingot capacity to 22.5 million tons. Other plans call for the addition of 3 million tons in blast furnace capacity, bringing the total to 15.2 million tons.

Some 2 million tons in strip mill capacity will be added, but there still may be a shortage of high quality flat-rolled products. Automakers are getting a third of the 1.7 million tons of strip mill

sheets available, but must bring in still more from the U. S.

Squeeze—The pinch in tin plate is still so bad that it's under statutory control. Home demand has doubled since prewar, and some of the export market has been lost to America. This year, Britain has been obliged to import cold-reduced tin plate from the U. S. In an effort to recapture at least the Commonwealth market, mills are being readied at Ebbw Vale and Velindre in Wales.

Other problems are on the way to solution. Before the war, Britain brought in 500,000 tons of scrap a year from America. After the war, she cleaned out over 7 million tons of war scrap from Germany. Now the German source is out, and she is turning to America again. However, she expects that the added 3 million tons of blast furnace capacity, and 10.8 million tons of home scrap will leave a deficiency of only 1 per cent in steelmaking metallics by 1958.

Rebuilding — Nineteen special carriers are being built to handle ore from Liberia, Labrador, Venezuela, Scandanavia, North Africa and the new Conakry field being developed with the French in French Guiana. In 1954, Britain imported 12 million tons of ore. Plans are for 17 million tons in 1958. Production of the high-phosphorus domestic ore will be stepped up to 17.5 million tons.

The problems of converting this high-phos ore have been licked by tilting open hearths, said to competitive costwise with bessemers.

Progress — Use of oxygen in electric furnace processes is standard practice, and the oxygen converter also is being introduced. Desiliconizing with oxygen will be introduced by Stewarts & Lloyds. Sinter is another hot topic. Capacity is being increased 25 per cent this year to 8.5 million tons. By 1958, capacity will be up to 10 million tons.

So far the program has cost $1.1 billion since the war. By 1958, the total will be $1.7 billion. An efficient steel industry is vital to Britain in her constant struggle for export markets. Of the expected increase in ingot capacity, 3 million tons are for export.

As America's hunger keeps packer plants humming . . .

Meat Machines Sell Well

MEAT machinery makers aren't beefing about business.

Says E. G. Vail, secretary of the industry's institute in Washington: "Ours is a stable industry. There are about 90 manufacturing companies, and sales volume has been running near a steady $20 million the last three years. About 75 per cent of this is done with packers, the remainder through wholesale houses."

Markets—William Schmidt, Cincinnati Butchers' Supply Co., says that the prime market is made up of about 5000 packers and 1500 secondary processors.

"We make over 700 pieces of equipment," he adds. Reason for the big line: "Machinery lasts a long time. A dehairing machine will clean hogs for 25 years without a squeak."

Makers—Most makers buy nearly all their components, like motors, speed reducers and nickel-bearing iron castings. Most machine their own castings. Cincinnati, however, makes its own spur gears but buys herringbone gears. V. D. Anderson Co., Cleveland, its machine has over 1000 parts, machines everything except motors. Castings are bought outside.

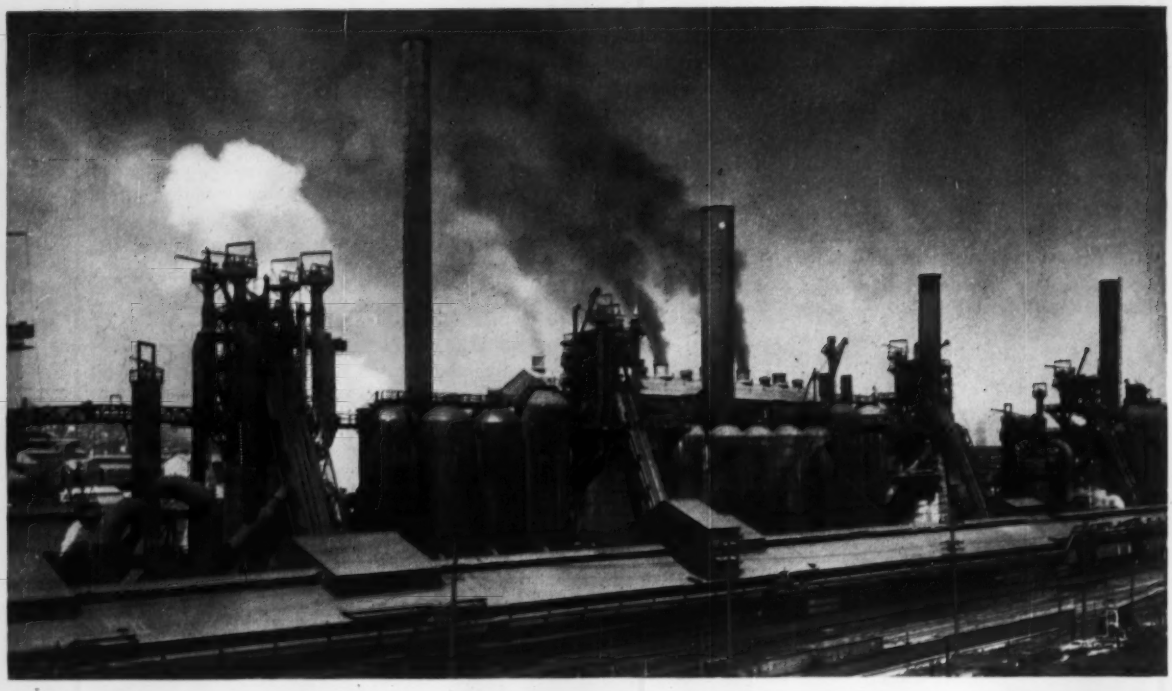
Machinery makers have a couple of problems. Increasing costs are forcing their prices up, meeting with considerable resistance from their customers. Some materials, notably stainless, are in short supply. Stainless is used mostly in hand carts for use on packing house floors. Cost problems slow its acceptance for machine components.

Modifications—Makers have several different approaches to improving sales. Some, like Cincinnati, blanket the market. Others, like Anderson, make a machine that's also sold to other industries. And there's also technical improvement, like the atomic sterilization machine below.

NEA

Steaks come out of the irradiation machine at Swift & Co.'s lab

HOW DOWN TIME WILL DROP IN YOUR PLANT



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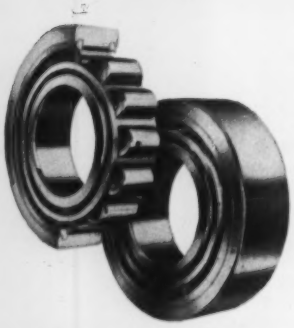


THINGS RUN SMOOTHER LONGER ON

As a cost-conscious management man, you're vitally interested in keeping down time down—*way down—and that's where HYATTS can help you!*

In the first place, HYATT has more roller bearing engineering experience than anyone else in the business. HYATT has the advantage, too, of selecting the choicest steels from America's leading producers, instead of being limited to a single source of supply. Then HYATT components are machined and assembled and inspected with watchmaker's precision on the finest equipment in the industry. Result: down through the years, HYATTS have conclusively proved *they keep things running smoother longer with minimum maintenance.*

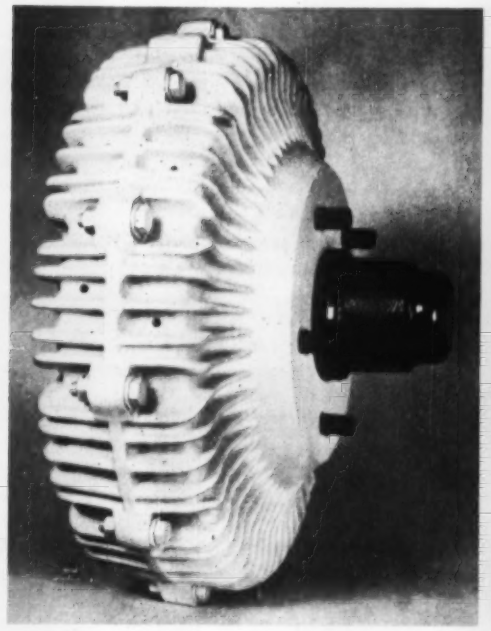
Take time today to see if HYATTS are being used for all roller bearing replacements in your plant. If not, take steps to see that HYATTS *will* be specified from now on. *They may help you save thousands of dollars every year!*

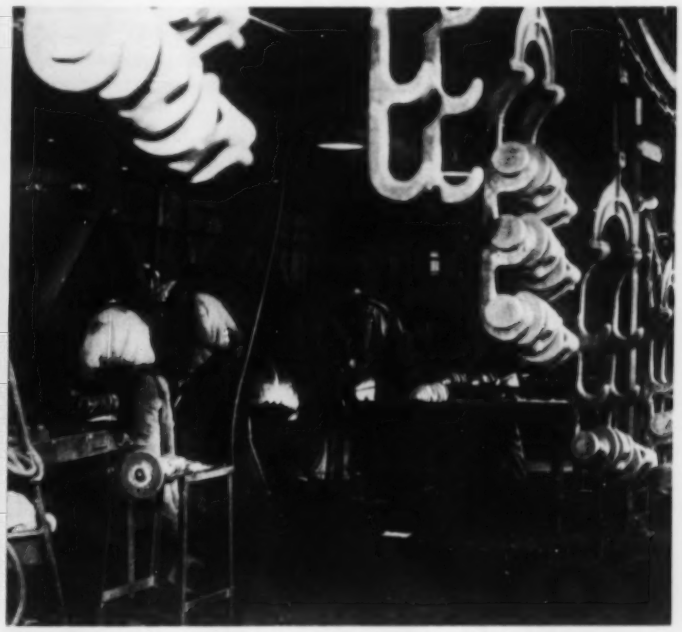
HYATT

STRAIGHT ○ BARREL ○ TAPER ○

ROLLER BEARINGS

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY





Prospective buyers of new double-disc brake (left) are cultivated, as . . .

Auto Supplier Builds Its Own Markets

RADIO LISTENERS in New York, Chicago, Los Angeles and Detroit have been requested for about a year to: "Ask your dealer when his car will have Auto Specialties double-disc brakes."

The commercials not only raised the question about brakes but also about Auto Specialties Mfg. Co. of St. Joseph, Mich., and what its particular mission in life might be.

The history of Auto Specialties goes back to the early days of the auto industry. Shortly after the turn of the century, cars were sold without tops. These luxuries were added by skilled artisans after the car was delivered. Tops were expensive, and the bugaboo of car owners in the goggle-and-duster era was the cracking of the canvas and bending of the bows when the tops were raised and folded a number of times.

Clamps First Product—To solve this problem, a clamp which separated the bows when the top was folded was developed and constituted the first product of Auto Specialties Co., then in Chicago. In time, over 70 makes of automobiles were being equipped with Auto Specialties top holders and the firm moved to Joliet, Ill., in a plant next to a malleable iron foundry supplying top holder castings.

Built on Sand—Two fires and the total collapse of the building on another occasion made the necessary expansion of production difficult, and it was decided that a new plant was the only answer. In 1916 the new plant was started in St. Joseph, Mich. A major reason: St. Joe abounds in a natural supply of sand which, of course, permeated foundry operations to the core.

Business grew by leaps and bounds, but by the twenties closed bodies were coming into their own and sounded an end to the top holder business. Not unprepared for the trend, the men of Auto Specialties had developed into expert foundrymen. It was a matter of time before most automotive firms turned to AS for their malleable iron castings.

Turn to Jacks—Not long after, one large automobile manufacturer suggested that AS turn out a new-type malleable iron screw jack which was to be included as regular equipment. The line has increased until today some 40 per cent of all auto jacks produced in the country are turned out by Auto Specialties Mfg. Co.

AS continues to be a heavy supplier of automotive malleable iron castings. Some 200 miles from Detroit, the firm finds its supply of sand and a continually modernized foundry enable it to remain competitive. Its castings range from valve rocker arms to truck and tractor differential housings. About 120 tons of malleable castings are turned out each day in 15,000 molds containing 1 to 24 castings each.

Cast Crankshafts — Among the

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parts, incidentally, are automotive crankshafts. Produced for companies like Studebaker-Packard Corp., they are checked with a 1-million-volt x-ray machine which quickly detects gas pockets that might bring costly engine failures. Although about one-half of the industry uses forged crankshafts, AS men argue that the trend is to cast steel crankshafts. "Shafts are becoming more complicated with smaller, more compact engines," they explain. "You can cast in the holes and recessed portions, where it takes a lot of machining to accomplish the same end with a forged unit."

That, briefly, is Auto Specialties Mfg. Co., progressive and successful auto parts supplier. Now to the double-disc brakes.

Use Car Momentum—First developed in 1931 by a Colonel Lambert associated with the firm, these brakes utilize the momentum of the vehicle to increase the pressure on the brake surface. This is done by steel balls rolling up a tapered ramp, and thus pressing the discs containing the friction material against the housing surfaces.

In the late thirties, AS got into the tractor brake market, supplying its double-disc brakes to a limited number of tractor manufacturers. Following the war, AS decided to push its disc brakes hard and launched a unique and highly successful advertising campaign. Using only two radio stations and two magazines concentrated in the farming Midwest, AS suggested that farmers ask their dealers when their tractor would have double-disc brakes.

You guessed it: The results were highly successful. Today, these brakes, marketed under the tradename Ausco Lambert, are on about sixty different tractor models of most big tractor manufacturers. It is with basically this same brake (operated hydraulically rather than mechanically as on tractors) which AS hopes to get into the passenger car field.

Slower Results — Although the firm had considerable success with its "demand-them" advertising campaign among the farmers, fruits of its approach to the car-buying public have been somewhat limited. Commercial vehicle operators who find brake relining a big item in their vehicle down time and operating costs are anxious for the change. Also enthusiastic are hot rod and sports car hobbyists who write in wanting to know where they can buy the brakes.

Auto Specialties people figure it may take some time for their campaign to hit the jackpot with the general public, however. Citing the fact that vehicle weights have increased along with operating speeds, they note that the braking principle has not changed with the progressively increasing demands of the vehicles. Not only that, they point out that lower rear axle ratios and automatic transmissions have reduced the effective engine braking force, also contributing to the demand on brakes.

Caveat — This is beginning to make itself felt in shorter brake life and increasing "brake fade," say AS spokesmen. Their tests indicate a 100-per-cent increase in lining mileage, compared with conventional brakes, and virtual elimination of fade. The brakes are automatically adjusting. Since they are of aluminum construction, they cut down unsprung weight appreciably. This is an important consideration in the riding quality of the car.

Already using disc brakes are the farm tractor, road machinery, aircraft and railroad industries. AS figures it's time for a change in the auto industry and most auto engineers are inclined to agree with them. Among auto engineers, however, there is more than some resistance to the double disc brake.

Dollars and Sense—Basic is the cost problem. Comparative cost figures for conventional brakes and the AS double-disc brakes aren't readily available, but conceivably the AS product could be in the range of 25 per cent more. Like anything else, cost in large measure is dependent on volume and whether part of the figure can be passed on to the consumer in optional equipment charges. Automakers, who in most cases don't figure the customer is ready for that kind of hike, wonder if the job can't be adequately done in other ways.

That's where Auto Specialties Mfg. Co. comes into the picture with its advertising campaign. It feels confident the public will one of these days come to recognize what in its opinion are deficiencies of present brakes under more or less unusual circumstances. Making the public aware of the brakes on their cars and the possibility for improvement are the goals of the AS advertising program.

Possibility — Many companies will be announcing improved brakes on 1956 models, and one company is seriously considering the double-disc brake for 1957. Perhaps in the next year or two the admonition to "ask your dealer" will again begin to pay off for Auto Specialties.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,257	621,318
June	825,031	635,540
July	815,061†	543,344
August		523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,896,678

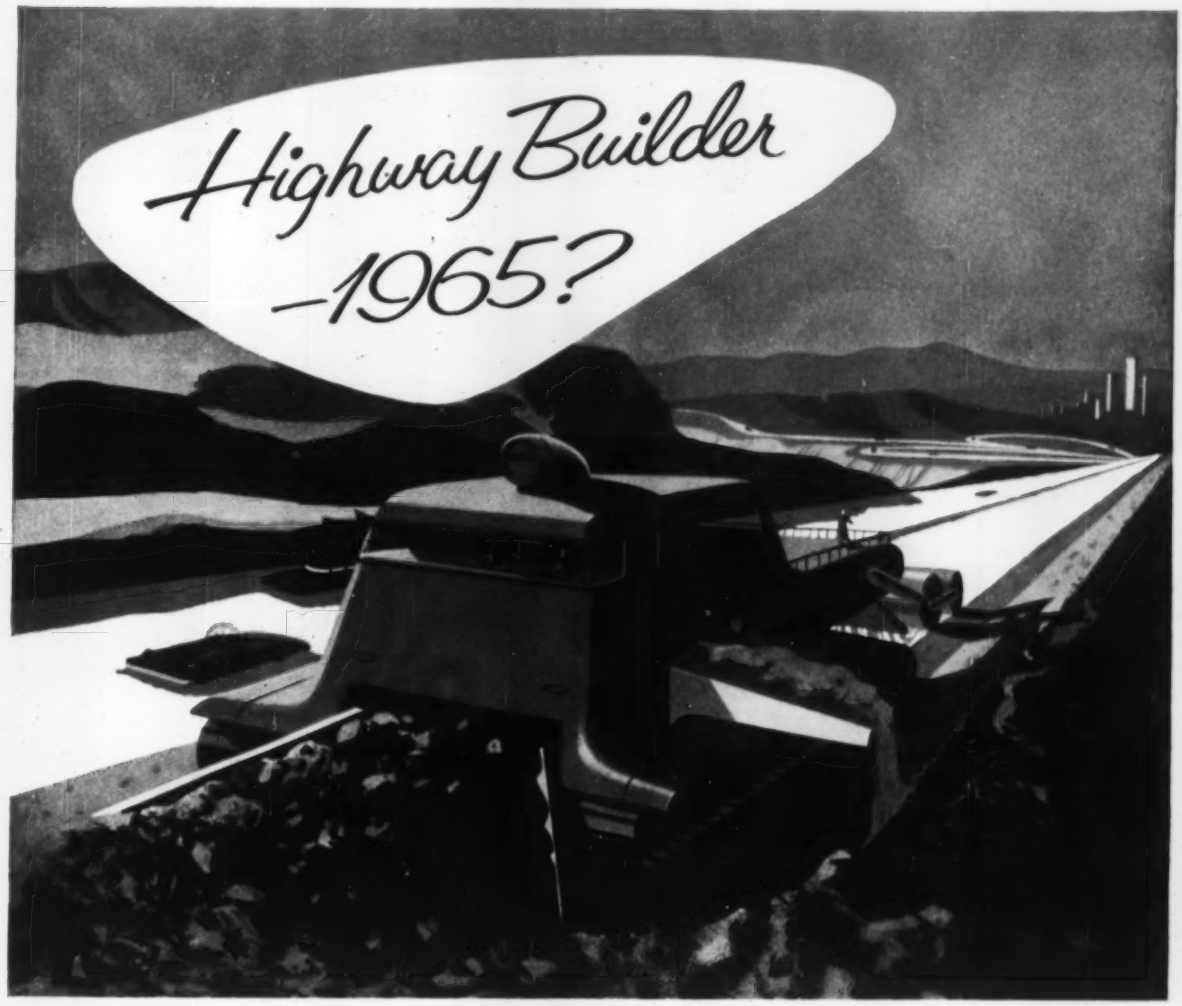
Week Ended	1955	1954
July 16	207,627	130,757
July 23	208,413	130,744
July 30	199,788	130,523
Aug. 6	170,004	124,168
Aug. 13	173,465†	119,208
Aug. 20	165,000*	121,736

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Exhaust Notes—

Production at American Motors is halted to prepare new production facilities for the Rambler. A new and separate final assembly line, new subassembly and feeder lines and new inspection and testing facilities will contribute to the increase of Rambler output 60 per cent. Production will resume about the first week in September.

NEW **DEPARTURES OF TOMORROW**



TOMORROW: A ribbon of paving unreels as this road-builder of the future turns open country into superhighway.

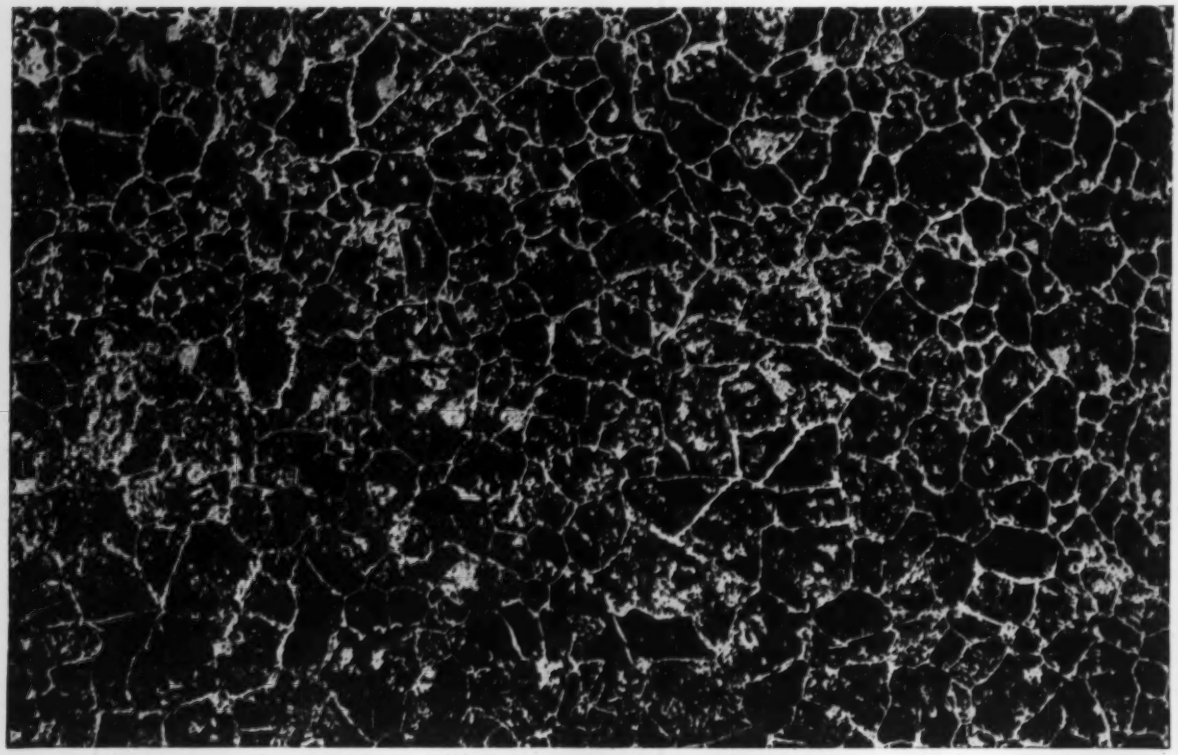
TODAY: New Departure ball bearings are used in power shovels, trucks and similar heavy-duty equipment, because they require no special attention and virtually no maintenance. Frequently they outlast the machine itself.

What a simple matter road building would be if it were reduced to a single machine that levels, grades and paves . . . all in continuous operations. Such future prospects are often made practical through New Departure ball bearings. With New Departures, moving parts are held in close alignment while handling loads from any angle. Delays for adjustment and maintenance are eliminated. That's because these ball bearings are designed for high capacity and manufactured to close precision tolerances . . . by the company that has originated many of the greatest advances in ball bearings. So if you are designing or improving a product for efficiency and endurance, call New Departure for *your* ball bearings.

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT

NEW DEPARTURE
BALL BEARINGS

NOTHING ROLLS LIKE A BALL



See for yourself why TIMKEN® forging steels give you uniform, high quality forgings

NOTE the uniform grain size in this photomicrograph of Timken® forging steel. We examine every heat of Timken forging steel—spectrographically to assure uniform grain size. As a result, you can be sure that forgings made from Timken forging steels will give you uniformly high ductility and resistance to impact.

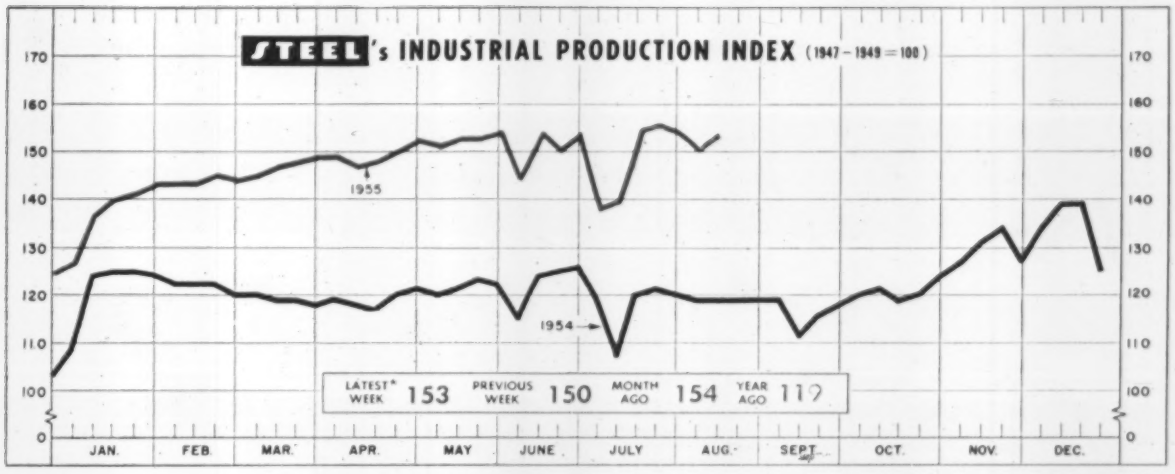
Because your order of Timken forging steel is handled individually in our mill we are able to target our conditioning procedure to your particular forging requirements. That minimizes your rejects.

Every lot of Timken forging steel responds uniformly to heat treatment because every lot has the same physical and chemical properties. For example, we rigidly control chemistry with the help of a direct-reading spectrometer which tells us the exact composition in 40 seconds . . . while the steel is still molten.

To top it off, Timken steel forging bars *save* you steel because their good dimensional tolerances produce uniform weight multiples with a minimum of steel lost in flashings. Get all these results in your forgings. Specify Timken forging steels. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Aug. 13. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%.

Employment Didn't Take a Vacation

AS JULY weighs in with a new high of 65 million workers, employment records continue to fall.

Paced by the speed with which industry snapped up school-age help from the labor market, the new high also was helped by the unusual solidity of manufacturing employment, which remained steady at 16.6 million, according to the Commerce department.

Balance—The normal July vacation downtrend was balanced out by the continuing expansion of factory activity. To get this stability in its proper perspective, look at July, 1953, when manufacturing employment fell almost 100,000. In July, 1954, the drop was more than 250,000. Among metalworking industries, electrical machinery, ordnance and instruments increased their work forces from June to July this year.

Since January, more than 500,000 workers have been added to factory rolls, the largest January-to-July gain since 1950. At 40.3 hours, July's workweek was almost an hour higher than last years' level.

In most nonmanufacturing activities, July was marked by continuing employment gains. Improvement was better than seasonal in construction, finance and service.

Short on Skill?—Unemployment dropped 200,000 to an estimated 2.5 million in July, resuming the downtrend interrupted in June with the addition of student workers. More significant: The decline in the number of unemployed adult men continued. It usually rises slightly at this time. Since last year, the character of the unemployed group has changed considerably. Far fewer of the unemployed are skilled or semiskilled workers.

Coupled with predictions from the Labor department of further employment gains ahead, this change is causing some concern over possible local tightness in skilled labor by fall.

No Let-up—The Labor depart-

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,228[1]	2,157	1,474
Electric Power Distributed (million kw-hr)	10,700[1]	10,925	8,996
Bitum. Coal Output (1000 tons)	9,150	9,600	7,499
Petroleum Production (daily avg.—1000 bbl)	6,621[1]	6,639	6,153
Construction Volume (*ENR*—millions)	$334.4	$317.7	$326.5
Automobile, Truck Output (*Ward's*—units)	165,000[1]	173,465	119,208
TRADE			
Freight Car Loadings (1000 cars)	780[1]	765	685
Business Failures (Dun & Bradstreet, no.)	213[1]	201	207
Currency in Circulation (millions)[3]	$30,285	$30,236	$29,911
Dept. Store Sales (changes from year ago)[3]	+5%	+13%	0%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$18,084	$20,479	$18,671
Federal Gross Debt (billions)	$277.1	$277.2	$274.6
Bond Volume, NYSE (millions)	$15.2	$17.4	$17.7
Stocks Sales, NYSE (thousands of shares)	8,694	10,543	13,805
Loans and Investments (billions)[4]	$84.9	$84.9	$83.5
U. S. Govt. Obligations Held (billions)[4]	$31.1	$32.2	$36.6
PRICES			
STEEL's Finished Steel Price Index[5]	207.63	207.63	194.19
STEEL's Nonferrous Metal Price Index[6]	241.1	241.1	215.1
All Commodities[7]	110.1	109.8	110.2
Commodities Other than Farm & Foods[7]	116.7	116.4	114.3

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

LIFE STEPS UP AT 40!

1915 - 1955
FORTY DE-STA-CO QUALITY STAMPINGS YEARS

Sure we've been making stampings for 40 years! . . . But we're going up the hill faster than ever!

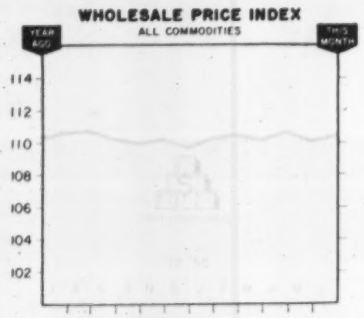
Expanded facilities! . . . Newer equipment! . . . Wider diversification! . . . Even more customers—and from every major industry!

The mere fact that we're the nation's best-known job stamping manufacturer . . . shows how we've progressed.

Now . . . as our life steps up at 40 . . . would be a good time to let us do a bang-up job for you, too!

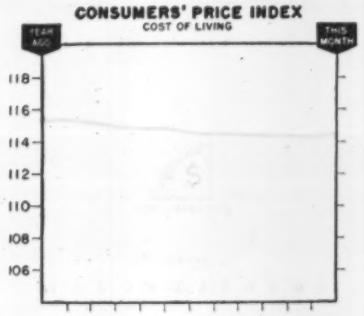
DETROIT STAMPING COMPANY
DE-STA-CO
359 Midland Ave., Detroit 3, Mich.
America's Best-Known Job Stamping Manufacturer

THE BUSINESS TREND



	1955	1954	1953
Jan.	110.1	110.9	109.9
Feb.	110.4	110.5	109.6
Mar.	110.0	110.5	110.0
Apr.	110.5	111.0	109.4
May	109.9	110.9	109.8
June	110.3	110.0	109.5
July	....	110.4	110.9
Aug.	....	110.5	110.6
Sept.	....	110.0	111.0
Oct.	....	109.7	110.2
Nov.	....	110.0	109.8
Dec.	....	109.5	110.1

U. S. Bureau of Labor Statistics
Charts copyrighted, 1955, STEEL



	1955	1954	1953
Jan.	114.3	115.2	113.9
Feb.	114.3	115.0	113.4
Mar.	114.3	114.8	113.6
Apr.	114.2	114.6	113.7
May	114.2	115.0	114.0
June	114.4	115.1	114.5
July	....	115.2	114.7
Aug.	....	115.0	115.0
Sept.	....	114.7	115.2
Oct.	....	114.5	115.4
Nov.	....	114.6	115.0
Dec.	....	114.3	114.9

U. S. Bureau of Labor Statistics

ment expects that heavier hiring will spread through a wider range of industries and that three-fourths of 149 major employment centers over the nation will experience employment gains. More jobs are predicted in steel, electrical machinery and furniture. It's believed that workers put back into the job market by auto model change-overs and by the seasonal shrinkage in farm hirings will be taken up easily.

One for the Books . . .

Another mirror of good business is the gross national product. It ran at an annual rate of $385 billion in the second quarter of this year, compared with $375 billion in the first. Both rates confounded many observers. They expected 1955 to show a gain of 3 per cent or so over 1954. The 1953 peak was regarded as unreachable.

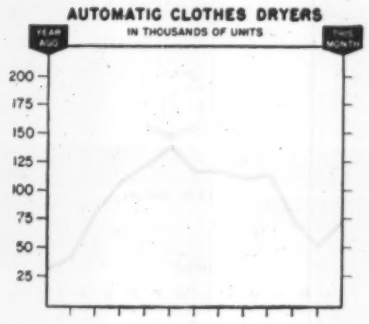
The slowdown in the steel operating rate, auto change-overs, vacations and scattered strikes will combine to reduce the rate for the third quarter. Even so, it probably will stay at least as high as the first quarter before picking up again to finish out the year. As we went into the third quarter, Commerce department figures showed that new orders continued to outrun shipments by almost $1 billion, while the growth rate of the metal and nonmetal industries accelerated and took up the slack caused by auto fall-off.

Construction continues to look good. Contract awards for future construction in the 37 states east of the Rockies set a new July high. The total was $2.3 billion, up 24 per cent from 1954, says F. W. Dodge Corp. Nonresidential building, the kind that will pour out dollars for months ahead and into next year, led the way.

Echoing gains in employment, second-quarter personal consumption expenditures rose by $5 billion to an annual rate of $250.5 billion. Expenditures for durable goods were up moderately, following the sharp rise in spending for autos and furniture in the previous quarter. Disposable income will continue at high levels through the rest of the year.

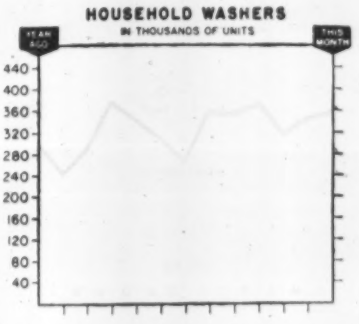
Prospects Good Through '56 . . .

Casting shipments are another business indicator that bids fair to set records. The Gray Iron Founders' Society, Cleveland, predicts they should equal or exceed the 13.7 million tons shipped in



Factory Sales—Units	1955	1954	1953
Jan.	115,383	82,195	62,260
Feb.	109,215	62,488	57,136
Mar.	113,498	54,796	49,593
Apr.	73,978	37,661	28,556
May	49,228	26,533	32,867
June	70,616	30,297	32,789
July		40,755	33,296
Aug.		80,165	70,774
Sept.		107,084	86,461
Oct.		122,182	81,839
Nov.		138,254	78,167
Dec.		115,341	82,730
Totals		897,751	696,468

American Home Laundry Mfrs. Assn.



Factory Sales—Units	1955	1954	1953
Jan.	357,354	249,956	277,309
Feb.	353,214	295,171	326,604
Mar.	370,555	307,862	345,989
Apr.	313,461	258,712	288,474
May	341,759	246,944	286,515
June	354,470	303,455	304,086
July		242,863	228,268
Aug.		293,243	291,260
Sept.		379,666	340,532
Oct.		339,769	310,867
Nov.		308,368	238,153
Dec.		264,803	191,570
Totals		3,490,212	3,429,627

American Home Laundry Mfrs. Assn.

1953, the industry's second-best year.

The industry is operating at over 90 per cent of maximum commercial demand. Through May, it had shipped 6.1 million net tons of castings, 20.7 per cent above the same 1954 period. Record-breaking shipments are expected to continue for the last half of the year and through the first half of 1956. Delivery lead times often must be extended because of order pressure.

Donald H. Workman, executive vice president of the society, reports that the heavy demand is spread well over the ten leading consumer industries.

Auto Race: Everybody Wins . . .

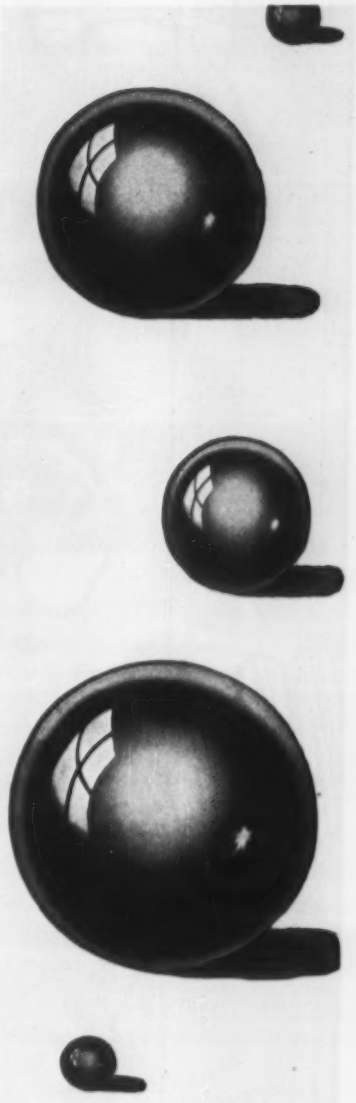
The battle of sales among auto giants will continue right down to the wire, says *Ward's Automotive Reports.*

Ford will begin its model change-over late in August, getting its offerings into the showrooms fully a month ahead of competition, and is scheduling 45 per cent more cars for production in October-November than any other single producer. The report notes that Chevrolet will be building up a production backlog during Ford's change-over, predicts that the battle won't be settled until Dec. 31.

Companies that supply the automobile industry can't lose. *Ward's* sees no cause for alarm in the record auto inventories in dealers' hands. It says that 707,000 cars, admittedly an all-time high, still average less than a month's supply at the present hectic sales pace.

Trends Fore and Aft . . .

"Prospects continue good for the balance of the year," says P. W. Johnston, president, Erie Railroad. "Piggyback traffic continues to grow" . . . Magnavox Co., television maker, lands 27 contracts for civil and military electronics work . . . Consolidated Engineering Corp. looks for more mergers among electronics companies; sees present 21,000 cut down as industry matures . . . Aeroquip Corp., maker of flexible hose and couplings, says business will say strong in capital goods industries through 1956 . . . The Purchasing Agents Association of Chicago notes a big uptrend in prices in July, with 95 per cent of survey respondents reporting inventories "too low" or satisfactory.



COOLIDGE
Balls

CHROME ALLOY
AND
STAINLESS

COOLIDGE CORPORATION
MIDDLETOWN, OHIO

the best of reports
on our youngster . . .
forged steel rolls
REPORT CARD
Name Ohio Forged Steel Rolls
Subject
Grade
Cold Reversing Mills
Excellent
Cold Reduction Tandem Mills
Excellent
Tin Plate Mills
Excellent
Aluminum and Non-ferrous Mills
Excellent
Ohio Rolls
SHAPING METAL FOR ALL INDUSTRY
THE OHIO STEEL FOUNDRY CO.
LIMA, OHIO • Plants at Lima and Springfield, Ohio

GEORGE A. SEAVER
. . . Marman Products v. p.-gen. mgr.

George A. Seaver was elected vice president and general manager, **Marman Products Co. Inc.**, Los Angeles, subsidiary of Aeroquip Corp. He was general manager of Norcor Mfg. Co.

Abe Haglund returned to **Axelson Mfg. Co.**, Los Angeles, as sales manager of its milling machine division. He started with Axelson, now a division of U. S. Industries Inc., in 1911 and became works manager and company delegate to Europe and South America. In 1944 he became associated with Griffin Ross Machinery Co. as a distributor for Axelson lathes in Southern California.

John W. Allis, vice president, was named president of **Louis Allis Co.**, Milwaukee. He succeeds **Edward P. Allis,** now board chairman.

Russell B. McNeill was made administrative assistant to the president of **Houdaille-Hershey Corp.** He has headquarters at Buffalo.

Allegheny Ludlum Steel Corp. appointed **E. B. Van De Mark** manager of production control and **Edward Hauprich Jr.** manager, customer service, at its Watervliet, N. Y., plant.

Theodore L. Funk was named assistant chief engineer, **McDowell Co. Inc.**, Cleveland.

JOHN R. MORRILL
. . . Servel v. p. and division mgr.

John R. Morrill was elected vice president of **Servel Inc.** and general manager of its commercial refrigeration division in Evansville, Ind. He resigned as vice president of Baker-Raulang Co. in 1952 to become a partner in Gibson Welding Supplies in Spokane, Wash. He recently disposed of his interest in the Spokane concern and assumed his responsibilities at Servel June 1.

T. E. Ward was elected president and treasurer, **Badger Malleable & Mfg. Co.**, South Milwaukee, Wis. He succeeds the late **C. M. Lewis.**

Alexander S. Keller, a director of **Niles - Bement - Pond Co.**, West Hartford, Conn., rejoins the organization as a vice president of Niles and general sales manager of its Pratt & Whitney division. At the request of the government he has been senior industry officer of an ECA mission to the Netherlands. Before that Mr. Keller was a vice president and director of Niles in charge of all P&W export operations. He assumes his new duties Sept. 1.

Forest Neely was named director of development and **John Kessler Jr.** chief engineer of the **Crusher Engineering Division** of Poor & Co., Philadelphia. **John Dellevigne Jr.** was made manager, parts service.

JOHN C. COONLEY
. . . new president of H-P-M

John C. Coonley was elected president, **Hydraulic Press Mfg. Co.**, Mt. Gilead, O., filling a vacancy created last April. Until January, he was general manager of the valve division of ACF Industries Inc. at Detroit.

Louis Martin was named general sales manager of **Westinghouse Electric Corp.'s** electronic tube division at Elmira, N. Y. He was general sales manager, Standard Coil Products Co. Inc.

Frank Blum was elected general sales manager of **Harnischfeger Corp.'s** new P&H Industrial Division, Milwaukee. He continues as sales manager, overhead crane division.

Denzil J. Showers was made sales manager, **Hill Machine Co.**, Rockford, Ill. He was assistant sales manager, machine tool division, Besly-Welles Corp.

E. H. Hughes, manager, sales order department, **Timken Roller Bearing Co.**, Canton, O., was named to the new post of assistant to the sales director.

Carl L. Zak was made general sales manager of the newly formed **Phoenix Steel Tube Division** of Phoenix Iron & Steel Co., Phoenixville, Pa., subsidiary of Barium Steel Corp. He was general man-

WILLIAM H. McKENNA

THOMAS R. GREGORY

. . . Hanlon-Gregory Galvanizing Co. vice presidents

ager-sales at Korhummel Steel & Aluminum Co.

William H. McKenna was elected vice president-sales and **Thomas R. Gregory** vice president-production, **Hanlon-Gregory Galvanizing Co.**, Pittsburgh. Mr. McKenna, a vice president since 1951, will direct all marketing operations. Mr. Gregory was manager of Thomas Gregory Galvanizing Works. **Lawrence Nipp** succeeds **Henry Volker** as superintendent. Mr. Volker remains as a consultant.

Clare B. Carlson was made manager, **Electrothermic Division**, Pittsburgh Lectromelt Furnace Corp., Pittsburgh.

Fred J. Meredith, former production manager, replaces **C. S. Tennant** as manager of **Ford Motor Co.'s** Cleveland engine plant No. 2. Mr. Tennant was made manager of the company's new engine plant to be built at Lima, O.

George L. Irvine succeeds **Ross I. Parker**, retired, as commercial vice president of **General Electric Co.** at Chicago. Mr. Irvine continues as commercial vice president in Dallas.

M. F. Glascock was made general superintendent of the Fairfield tin mill of **Tennessee Coal & Iron Division**, U. S. Steel Corp., Fairfield, Ala. He succeeds **John R. Hunt**, now chairman-operating committees on the staff of J. M. Spearman, TCI vice president-operations.

Arthur J. Zwanzig was made assistant to the vice president and general manager, **Alloy Precision Castings Co.**, Cleveland. He was chief engineer with American Electro Metal Corp.

Alan Wood Steel Co., Conshohocken, Pa., elected **William E. Boger** vice president - operations and **Perry L. Francis** vice president-marketing. Mr. Boger was general superintendent; Mr. Francis, vice president-sales. **Howard W. Read** (continuing as comptroller) was elected vice president in charge of planning and development.

Basil C. Kimball fills the new post of manager-research and development at **Worcester Pressed Steel Co.**, Worcester, Mass.

Howard C. Gebhart, chief engineer of Kett Tool Co., was named chief engineer of **Rockwell Mfg. Co.'s** Delta Power Tool Division plant at Bellefontaine, O. He succeeds **John B. Unterweger**, recently promoted to factory manager. **H. E. Rittenhouse** was made chief engineer of Rockwell's Pittsburgh division to succeed **Paul Mankin**, promoted to general manager of the division.

James W. Stuart was made sales manager, **Tabor Mfg. Co.**, division of Turbo Machine Co., Lansdale, Pa. He was assistant sales manager, Osborn Mfg. Co.

Electric Products Co., Cleveland, elected **Dr. W. A. Thomas** vice president-engineering and **J. R. Williams** vice president-manufacturing.

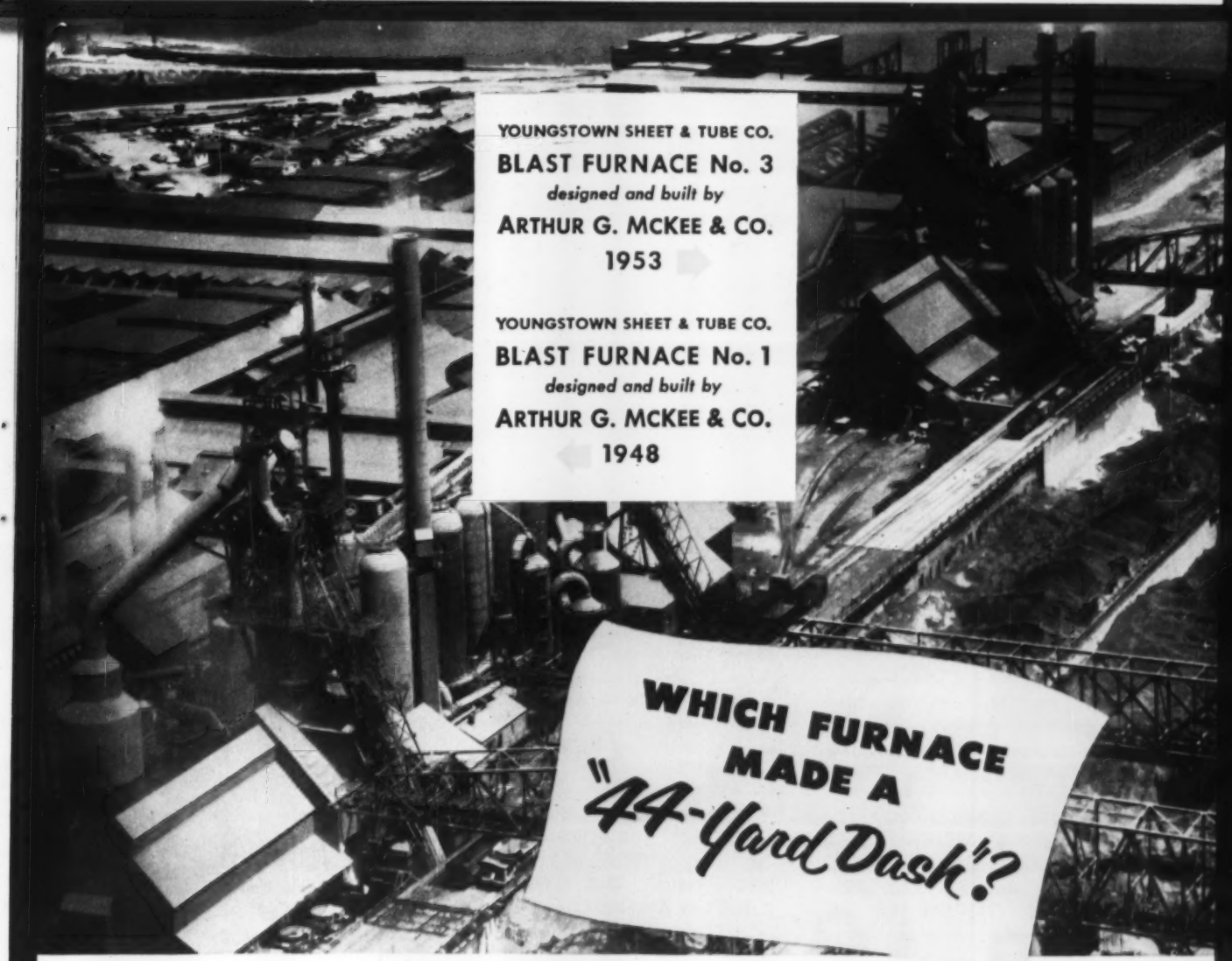
Earl J. Peters joined **Ace Drill Corp.**, Adrian, Mich., as general sales manager.

William A. Schrade was elected president of **Clemson Bros. Inc.**, Middletown, N. Y. He was vice president-general manager. Mr.

WILLIAM E. BOGER

PERRY L. FRANCIS

. . . executive positions at Alan Wood Steel Co.


YOUNGSTOWN SHEET & TUBE CO.
BLAST FURNACE No. 3
designed and built by
ARTHUR G. McKEE & CO.
1953
YOUNGSTOWN SHEET & TUBE CO.
BLAST FURNACE No. 1
designed and built by
ARTHUR G. McKEE & CO.
1948
WHICH FURNACE MADE A "44-Yard Dash"?

IN 1948, during a period of peak demand, McKee designed and built the new Youngstown Sheet & Tube No. 1 Furnace on a temporary foundation, 131 feet 6 inches from its present site.

While the original No. 1 stack was still in blast McKee engineers erected the furnace shell, offtakes and uptakes, and top structure on a temporary structural steel foundation. With the plate work almost completed, the old furnace was blown out and dismantled and a new foundation built. The new No. 1 Furnace then made its "44-yard dash," across a specially-constructed platform, to the permanent location. The unique engineering project was completed 27 days ahead of schedule and elapsed time from iron to iron was only 97 days.

The new, 28-foot-hearth-diameter Youngstown No. 3 Furnace, designed and built by McKee, was blown in early in 1953.

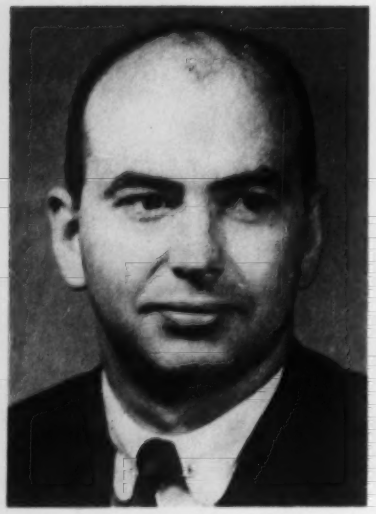
Both of these furnaces, from their foundations up, are products of the meticulous engineering and experienced construction methods provided by the McKee organization.

50th ANNIVERSARY

McKee Engineering Services

Arthur G. McKee & Company • Engineers and Contractors

Headquarters: McKee Building • 2300 Chester Avenue • Cleveland 1, Ohio
Offices: New York, N. Y. • Union, New Jersey • Washington, D. C.
British Representatives of Metals Division: Head, Wrightson & Co., Limited
Canada: Arthur G. McKee & Company of Canada, Ltd., 372 Bay St., Toronto



C. TAYLOR MARSHALL
. . . Pittsburgh Coke & Chemical post

HOMER C. GRAY JR.
. . . Wales-Strippit v. p.-sales dir.

STANLEY S. KRENTEL
. . . MacDermid Western v. p.-sales mgr.

Schrade succeeds the late **William E. Cross.**

Pittsburgh Coke & Chemical Co., Pittsburgh, promoted **C. Taylor Marshall** to general manager of its newly consolidated coke and iron division.

William O. Robertson was named vice president-sales, **Armco Drainage & Metal Products Inc.**, Middletown, O., subsidiary of Armco Steel Corp. He was vice president and eastern division manager. **T. M. Neibling,** vice president and southwestern division manager, assumes the same position in the eastern division.

Ralph F. McIntyre was elected president and chairman of **Ralston Industries Inc.**, San Diego, Calif.

Kenneth L. Magee was made director of product engineering, **J. I. Case Co.**, Racine, Wis.

Homer C. Gray Jr. was elected a director of **Wales-Strippit Corp.**, North Tonawanda, N. Y., and appointed vice president and director of sales. He was Midwest division sales manager at Chicago and is succeeded by **Norman F. Weyland.**

A. A. Harris was named sales manager, lawn mower division, and **Don Blasius** manager, accessory sales division of **McCulloch Motors Corp.**, Los Angeles.

Joseph H. McGraw was made assistant district manager at Cleveland for **Vanadium Corp. of America.** He is replaced as sales office manager in New York by **Daniel A. Hackett.**

John Patterson was made manager of mill products sales, **Beryllium Corp.**, Reading, Pa. He was New England district representative.

Stanley S. Krentel was elected vice president and sales manager of **MacDermid Western Inc.**, Ferndale, Mich., subsidiary of MacDermid Inc. He has been with MacDermid for ten years, most recently as manager of the Michigan sales territory.

Francis R. O'Leary was elected executive vice president, **Emhart Mfg. Co.**, Hartford, Conn., a new post. With Curtiss-Wright Corp. since 1948, he was a vice president of the concern and general manager of its propeller division. **Morton S. Cressy,** general manager of Emhart's Hartford - Empire Division, and **J. Herbert Mosley,** general manager, Standard-Knapp Division, were elected vice presidents of the parent company.

C. Fred Duff was made assistant sales manager, **Morse Twist Drill & Machine Co.** He continues headquarters at Chicago.

OBITUARIES . . .

Emil E. Knobloch, president of **Bay City Forge Co.** and treasurer of **Union Iron Works,** both of Erie, Pa., died Aug. 4.

William A. Hull, 81, retired president, **Industrial Tool & Die Co.**, Dayton, O., died Aug. 4.

Frederick D. Herbert, 81, retired president and director, **Kearfott Co. Inc.**, New York, died Aug. 4.

John H. Davis Jr., 52, president, **Alloy Steel Products Co. of New Jersey,** died Aug. 4.

A. W. Wisk, 49, assistant to the president, **Comfort Products Corp.**, Dallas, died July 29.

John C. Mahoney, 78, retired superintendent of turbine installation, **General Electric Co.**, Schenectady, N. Y., died Aug. 2.

George Troxell, 60, manager of sales-carbon bars, **Bethlehem Steel Co.**, Bethlehem, Pa., died Aug. 7.

William T. Brownscombe, 68, former president, **Follansbee Steel Corp.**, Pittsburgh, died Aug. 9.

Winthrop T. Scarritt, 64, retired president, **Pratt Industries,** Frankfort, N. Y., died Aug. 2.

Donald R. Lowry, 67, president and director, **Ingersoll-Rand Co.**, New York, died Aug. 9.

Every 3 seconds—a heated bar with this Magnethermic 10,000 cycle Induction Heater

This 10,000 cycle unit preheats 1" steel bars to 2200 degrees for upsetting at rate of one every 3 seconds or over 1,000 per hour.

Induction preheating for forging or extrusion has many advantages: speed, economy, cleanliness, close control, adaptability, increased die life and attractive working conditions.

But the question of which frequency—low, dual or high, sometimes confuses the issue. Each has its own place and its advantages.

Magnethermic makes induction heaters only, 60 through 10,000 cycles, and can give you experienced guidance on selecting the best frequency for your heating job.

Low—Dual—High Frequency?

ASK MAGNETHERMIC

INDUCTION HEATING

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corporation

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60 THROUGH 10,000 CYCLES

Canadian Pipe Mill

Rheinrohr subsidiary may build second multimillion facility to make large sizes

CANADIAN WESTERN Pipe Mills Ltd. may build a second multimillion dollar pipe and tube mill. The firm's first plant was opened officially at Port Moody, B. C., July 20 (STEEL, Aug. 1, p. 118). The decision on the second plant is expected to be made soon, says Max Paul Meier, West German industrial leader and chairman of the Rheinrohr Organization, parent company of the Canadian firm.

While Mr. Meier emphasized that details are still on the planning boards, he said a second mill probably would produce pipe in a full range of large sizes, possibly up to 16 in. diameter.

Products—The Port Moody mill has an annual potential of more than 60,000 tons of black and galvanized pipe, ranging in diameter from ½ to 4½-in., and lengths of 10 to 45 ft. It is for gas, oil, water, steam, air, electrical and structural uses.

Initial production plans include rigid and thin-walled conduits for the electrical field; mechanical tubing which is used in many machine-assembled tubular products; and a different grade of tubing for furniture manufacture.

All products are produced by the continuous, cold-forming, resistance-weld process, which gives high quality in the finished product and ensures fabricating efficiencies.

The plant's first major production for marketing was 3 and 4-in. pipe for development work in the oil and natural gas field of Alberta. More than 6 million lb of coiled Canadian steel strip is in stock and on order to cover orders.

New Firm Will Etch Foil

Republic Foil & Metal Mills Inc., Danbury, Conn., producer of aluminum foil, incorporated Republic Etched Products Inc. for the purpose of etching extra-high-purity aluminum foil for use in electrolytic capacitors. Construction of a plant and installation of equipment will commence shortly. Basic metal will be furnished by Ets. Charles Coquillard, Froges, France, and will be rolled by Republic Foil & Metal Mills, using Coquillard methods.

Hewitt-Robins Buys Firm

Hewitt-Robins Inc., Stamford, Conn., purchased W. A. Jones Foundry & Machine Co., Chicago, maker of heavy-duty speed reducers, pulleys, gears and other accessories used to drive machinery. The property will be operated as the Jones Machinery Division and is the company's fourth machinery plant. Hewitt-Robins also operates four rubber products plants.

Transformer Maker Expands

R. E. Uptegraff Mfg. Co., Scottdale, Pa., will add 22,000 sq ft to its manufacturing facilities. The new building will house improved equipment and facilities for the manufacture of transformer tanks and small utility distribution transformers.

Republic Cuts Air Pollution

Republic Steel Corp. will install 150 new doors on the No. 5 coke oven battery at its Cleveland steel plant to eliminate smoke leakage, says M. E. Goetz, district manager. Three new exhausters will go into its chemical by-product plant to increase the suction which draws gas from the ovens into collecting mains. Both programs are in addition to the $10 million Republic has spent fighting air pollution at the Cleveland plant since World War II.

The doors incorporate a new feature in construction. Once cams are hydraulically locked in place, spring-powered plungers, spaced about 8 in. apart around the rim of the door, exert uniform pressure on a stainless steel diaphragm to bring its knife-edge tightly against the jamb to make an air-tight seal.

Bearing Firm Builds Addition

Nice Ball Bearing Co. Philadelphia, will add about 20,000 sq ft of space to its factory.

Government Approves Merger

The Justice department's Anti-Trust Division, has approved the proposed merger of three major appliance firms: Whirlpool Corp., St. Joseph, Mich.; Seeger Refrigerator Co., St. Paul; and the stove and air conditioner divisions of Radio Corp. of America, New York. The new company would be known as the Whirlpool-Seeger Corp. Approval must be sought from stockholders, including Sears Roebuck & Co.

Allis-Chalmers Enlarges Plant

Allis-Chalmers Mfg. Co., Milwaukee, is increasing the productive capacity of its Cedar Rapids, Iowa, works 50 per cent. An expenditure of $1.8 million will be made for new buildings and machine tools. The plant turns out motor scrapers and motor wagons.

Dixie Firm Buys Equipment

Dixie Electrical Mfg. Co., Birmingham, purchased the equipment of Griffin Mfg. Co., Dallas, and will install it at the company's plant now under construction in Birmingham. Dixie Electrical was organized recently to manufacture electric pole line equipment.

Jarecki Corp. Expands

Jarecki Corp., Grand Rapids, Mich., has launched a $1,250,000 expansion program which includes the purchase of new machinery and equipment and an addition to its Beverly street plant to accommodate huge new presses and cranes. The die and stamping concern primarily serves the automotive and appliance industries.

Ohio Firms Merge

Hercules Galion Products Inc. was formed by the merger of Hercules Steel Products Corp. with Central Ohio Steel Products Co., both of Galion, O. Operations will be combined on Aug. 31. Officers of the new company are: David Van Alstyne Jr., chairman; E. Paul Monroe, president; O. C. Henkel, senior vice president; Alfred Dangler Jr., executive vice president; J. R. Melish, secretary and

treasurer. Products of the firm and its subsidiaries include: Dump bodies and hoists, hydraulic lift gates, metallic burial vaults, concrete mixers, van-type truck bodies, refuse collection units, fertilizer and cement spreaders and food handling equipment.

Kingwell Bros. To Build

Kingwell Bros. Ltd., manufacturer of bronze bushings and bearings, will move from its San Francisco location to a $200,000 plant in Richmond, Calif. Completion is expected early next year. The firm observed its 100th anniversary this year.

GE Makes Construction Awards

Two subcontracts for construction of General Electric Co.'s $20-million distribution transformer plant (STEEL, Jan. 24, p. 66) have been awarded. Paterson-Emerson-Comstock Co. of Alabama Inc., Birmingham, was the successful bidder for the electrical contract; Hicks & Ingle Co., Charlotte, N. C., for the mechanical contract. J. A. Jones Co., Charlotte, has the contract for general construction. The plant will be completed in mid-1956.

Spincraft Buys Felcon Tool

Spincraft Inc., metal spinning, stamping and fabricating firm, purchased Felcon Tool & Die Co., manufacturer of tools, dies, jigs and fixtures. Both are in Milwaukee. Felcon's operations are being consolidated within the Spincraft plant.

Western Electric Expands

Western Electric Co., New York, acquired a building at 601 S. Haven St., Baltimore, to expand manufacturing operations in that city. The building contains 74,600 sq ft.

Capitol Foundry Reorganized

National Malleable & Steel Castings Co., Cleveland, has dissolved its wholly owned subsidiary, Capitol Foundry Co., Phoenix, Ariz., and is operating it as Capitol Foundry Division. Arizona Iron Works, a former subsidiary of Capitol Foundry, had been absorbed previously by that company. In addition to steel and gray iron castings, Capitol produces grinding balls. E. A. Spring, formerly president of Capitol, is general manager of the division. B. J. Aamodt is works manager; J. F. Thomas, sales manager.

Another Shipment for Highway Construction

This 170-ft, 85-ton girder, measuring 14 ft high in some parts, was fabricated by Fort Pitt Bridge Works at its Canonsburg, Pa., plant. It forms part of a bascule bridge crossing the Maumee river and is a component of the Toledo, O. Expressway. Fort Pitt is fabricating more than 7000 tons of steel for the project

Plans Atomic Power Plant

Pennsylvania Power & Light Co. will build a privately financed atomic power plant of at least 150,000 kw. It will utilize the homogeneous-type reactor. Westinghouse Electric Corp. will be a co-developer in the design and the supplier for the reactor and its related electric generating equipment. The in-service date is 1962.

Lithium Firm Widens Research

Lithium Corp. of America Inc., Minneapolis, established a department for product research and development. W. M. Fenton is its director. J. Douglas Campbell, formerly head of the firm's New York sales office, has been appointed to succeed Mr. Fenton as director of sales.

Ford Plant for Nashville, Tenn.

Ford Motor Co., Dearborn, Mich., will construct a glass manufacturing plant at Nashville, Tenn. The facility is part of Ford's $2,325-million postwar expansion and modernization program, involving the addition of more than 50 million sq ft of floor space to Ford facilities in the U. S. The plant is scheduled to be in operation in 1957. A. R. Wardrop will direct operations of the Nashville facility which will contain more than 1 million sq ft of floor space.

Ottawa Steel Changes Hands

L. A. Young Spring & Wire Corp., Detroit, purchased Ottawa Steel Inc., Ottawa, Kans., and will operate the property as the Ottawa Steel Division. It makes hydraulically operated implements for industrial tractors. The division is headed by E. L. Johnson, previously associated with the management of Ottawa Steel.

Selects Desert for Plant Site

Assembly Products Inc., Chesterland, O., is building a plant at Desert Hot Springs, Calif., 12 miles northwest of Palm Springs, Calif. Delicate electrical instruments for measurement and control will be assembled in small "climate-controlled" buildings. Houses, recreational and other facilities for employees will be erected.

Press Plant Nears Completion

Near completion is the installation of two, 8000-ton extrusion presses at the Air Force heavy press plant, Halethorpe, Md. They will be operated by Kaiser Aluminum & Chemical Corp. One press is scheduled to be in operation in September. Loewy - Hydropress crews are testing it. They'll start on the other next month. The plant cost more than $15 million, excluding presses, which will force aluminum billets (up to 1400 lb) through dies that can produce thousands of hollow and solid

shapes—up to 17 in. in maximum cross section; and flat sections up to 32 in. wide, with a maximum length of 85 ft. Auxiliary equipment includes a station that can cast billets 20 in. in diameter, 24 ft long, weighing over 6000 lb.

Hoe Opens Oregon Saw Plant

R. Hoe & Co. Inc., Bronx, New York, manufacturer of saws and printing equipment, opened a saw manufacturing plant at 2700 Tacoma Ave., Portland, Oreg. Its 30,000 sq ft of floor space has twice the productive capacity of the firm's old Portland plant.

Besly-Welles Buys Two Firms

Besly-Welles Corp., Beloit, Wis., purchased Metro Tool & Gage Co., Chicago, and Lake Tool Co., Crystal Lake, Ill. It will operate them as divisions. Manufacturing operations of Lake Tool Co., producer of standard carbide tools, will remain in Crystal Lake. Machinery and equipment of Metro Tool & Gage are being moved to Beloit.

Thompson Moves Valve Division

Thompson Products Inc. is operating its new $5.5-million office and factory at 1455 E. 185th St., Cleveland, which houses its Valve Division. The move from three greater Cleveland locations came at the company's 50th year of valve manufacture. Further expansion is under way: The new facility will be enlarged to nearly a half million square feet.

Instrument Firms Merge

Beckman Instruments Inc., Fullerton, Calif., purchased Liston-Becker Instrument Co., Springdale, Conn., maker of infrared gas analyzers and specialized electronic amplifiers. Beckman plans further expansion into new fields of instrumentation and automation.

Fabricator Builds Addition

Portland Copper & Tank Works Inc., South Portland, Me., is building an additional 20,000 sq ft of manufacturing space for stainless steel fabrication.

More Refractories

National Lead subsidiary will boost capacity of refractories plant by 35 per cent

CHAS. TAYLOR Sons Co., Cincinnati, a subsidiary of National Lead Co., New York, plans a major expansion and improvement of its Taylor, Ky., plant. The firm makes special refractories, mainly for the metallurgical and glass industries.

Production capacity of the plant will be increased about 35 per cent. Work has started on the installation of an additional tunnel kiln, continuous dryers and new grinding, screening and batching equipment.

The project will be completed in 1956. Officials say it will result in improved quality control and shorter delivery time, in addition to increasing production of bonded mullite and zircon refractories.

The Taylor, Ky., plant was constructed in 1902 to produce fireclay refractories from local clays. The company began production of sillimanite, or mullite bonded super refractories, in 1926, zircon (zirconium silicate) refractories in 1933. The manufacture of fireclay refractories was discontinued in 1944 to devote production exclusively to special high-temperature refractories.

Stamping Firm Diversifies

City Auto Stamping Co., Toledo, O., purchased Globe-Wernicke Co., Cincinnati, subject to stockholders' approval. This is part of the Toledo firm's long-range program of diversification and expansion. It makes steel office equipment, library shelving and stationer's supplies.

Metal & Thermit Expands

Metal & Thermit Corp., New York, will establish a combined general office, research and distribution center in Rahway, N. J. Representing an investment of more than $2 million, it is scheduled for completion in April, 1956, at which time the company's executive offices will be moved to 100 Park Ave., New York, to provide space for growth. The new center will house the company's general offices and will replace warehouses and sales offices in Newark, N. J., and Philadelphia.

REPRESENTATIVES

Kencroft Associates Inc., Buffalo, and Ontario Metal Supply Inc., Rochester, N. Y., have been franchised to distribute standard Ampco mill and foundry products by **Ampco Metal Inc.**, Milwaukee.

The Materials Handling Equipment Division of Union Steel Products Co., Albion, Mich., appointed Ken-Dick Corp., Moline, Ill. and Des Moines, Iowa, as representative for its equipment.

Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn., appointed Tri-Tex Machine & Tool Co., Houston, as representative in south Texas to handle sales and service of its machine tools, cutting tools, precision gages, Kellerflex machines and burs.

Parker Appliance Co., Cleveland, appointed these distributors: Industrial Piping Supply Co., Charlotte, N. C.; Chicago Tube & Iron Co. Inc., Chicago; Metal Goods Corp., Wichita, Kans.; and Williams & Co., Columbus, O., and Louisville. Parker makes hydraulic and fluid system components.

Howard C. Robinson was appointed sales representative in Maryland and Virginia for the Steel Strapping Division, the **Stanley Works**, New Britain, Conn.

Dow Chemical Co., Midland, Mich., appointed Copper & Brass Sales Inc., Detroit, a distributor of its magnesium mill products. Five firms now distribute products of Dow's magnesium mill at Madison, Ill. Others are: Fullerton Steel & Wire Co., Chicago; Hubbell Metals Inc., St. Louis; Reliance Steel Co., Los Angeles; and A. R. Purdy Inc., Lyndhurst, N. J.

Pioneer Tool Engineering Inc., El Segundo, Calif., producer of cast aluminum tooling plates and bars, added these new distributors: Kasle Steel Corp., Detroit; South-

ern States Iron Roofing Co., Savannah, Ga.

Capewell Mfg. Co., Hartford, Conn., appointed Rueger Co., Los Angeles, its representative in the Pacific Coast states and Arizona. Products include: Hacksaw blades; metal cutting band saws and coils; flat tool steel; pipe tools and wrenches; carpenters' and mechanics' hammers; and hacksaw frames.

Gear Grinding Machine Co., Detroit, appointed two new distributors for its recently developed single - spindle automatic screw machine, Detroit Screwmatic 750: American Cam Co. Inc., Hartford, Conn.; Guthery Machine Tool Corp., Long Island City, N. Y.

NEW ADDRESSES

Detroit Steel Corp., Detroit, moved its district office to 3611 W. Devon Ave., Chicago, Ill. A. J. Rousseau is district manager.

H.E.B. Machine Tools Inc. moved its executive and sales offices from New York to larger quarters at 708 Clare St., Lansing, Mich. The move centralizes all operations.

The **National Industrial Conference Board** opened its new offices at 460 Park Ave., New York, N.Y. John S. Sinclair is president.

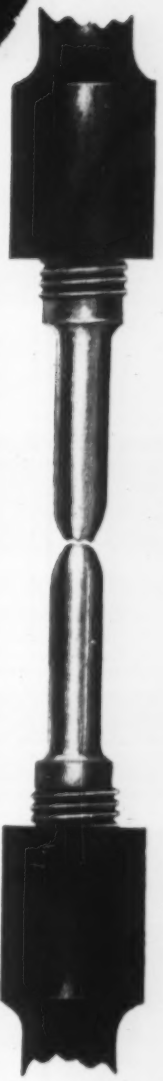
McInnes Steel Co., Corry, Pa., producer of bars and shape forgings, moved its Cleveland office to 20310 Kinsman Road. R. H. Fitzsimmons is district sales manager.

Metal & Thermit Corp., New York, moved its western headquarters into a new warehouse and office building at 1926 Maple Ave., El Segundo, Calif. The Pacific Coast regional sales headquarters are under the direction of E. E. Anderson, vice president-general manager for the West Coast.

Resdel Mfg. Co., maker of radar systems, moved into enlarged quarters at 330 Fair Oaks Ave., Pasadena, Calif.

INSIDE STORY

AUSTENAL SILENT TREATMENT



This is the inside of a creep rupture machine at Austenal Laboratories. A bar of ultra-strong alloy is subjected to high stress for many hours at jet engine temperatures until it finally ruptures.

The drawing symbolizes determination of rupture strength of an alloy to be used in Austenal's Microcast process for the investment casting of high temperature components for jet engines. This is one of many laboratory tests used to ensure the quality and dependability of the alloys used.

The alloy was made in Austenal's own alloy plant. Skilled metallurgists and chemists produce alloys to pre-determined specifications and check and re-check each individual melt to ensure high quality standards.

Quality control is basic in Austenal's Microcast process. It is just one of the reasons why more jet engines use Austenal components than any other—and why American industry depends upon Austenal.

Let Austenal help solve *your* precision casting problems. Austenal Microcast can simplify and improve your entire production picture.

See Austenal's original informative 16mm color movie, "A Story of Industrial Progress". Available without charge.

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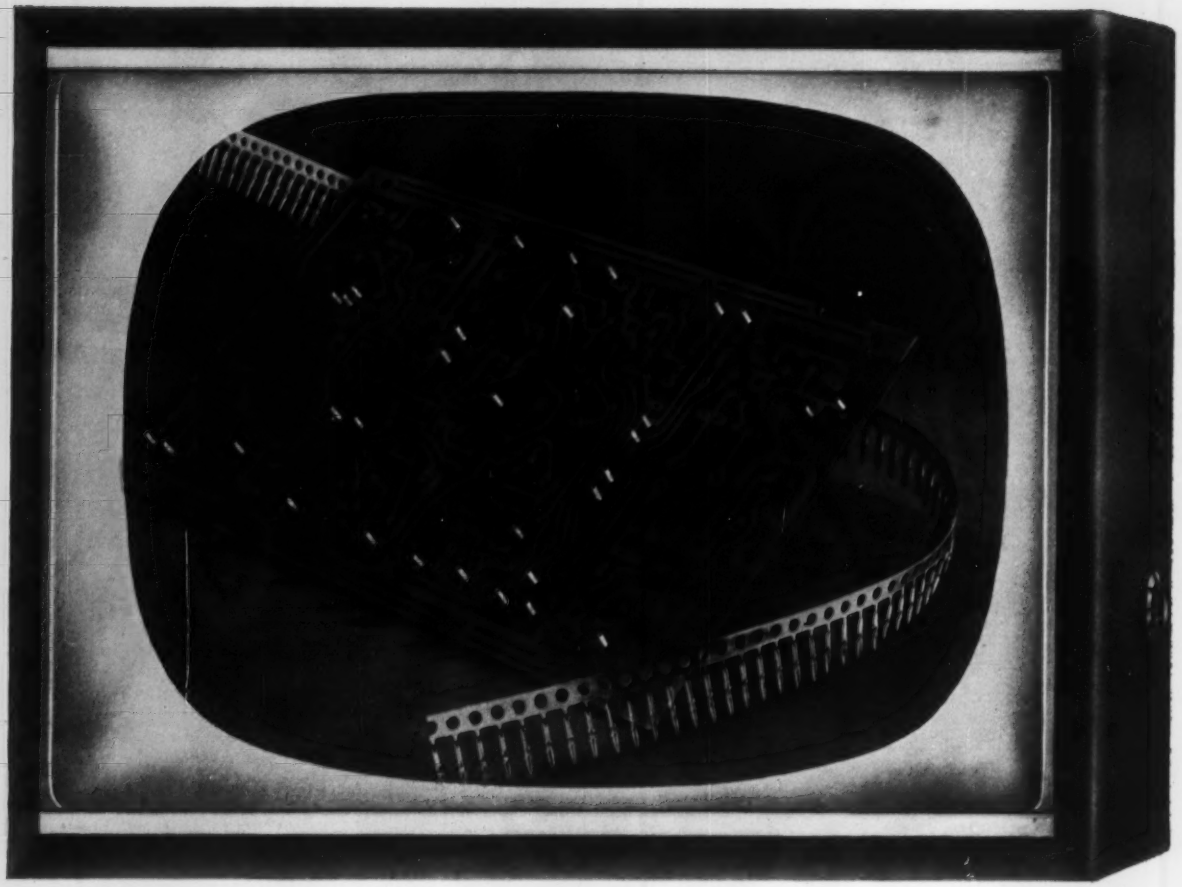


Printed circuit panel courtesy of Admiral Corporation

Brass Snap-in Terminals— key to automatic circuit wiring

Bridgeport High I.Q. Brass permits automatic, high-speed insertion of miniature terminals into printed circuit panels.

Malco Tool and Manufacturing Company of Chicago designed and manufactured these ingenious printed circuit components and the fully automated machines for inserting them into printed circuit panels. To make these precision components for the television, radio and electronic industries, Malco uses Bridgeport's High I.Q. Brass Alloy No. 37. One of the High Inner Qualities of this alloy is its controlled temper —exactly what is needed to meet the critical tension tolerances for this precision machine assembly.

The use of this alloy by Malco is another example of how Bridgeport's High I.Q. alloys are helping to improve products and lower manufacturing costs in a wide variety of industries. To find out how Bridgeport alloys can help in your particular application, call the Bridgeport office near you. They'll give you complete information and the help of Bridgeport's Technical Service on your metals and methods.

BRASS Bridgeport CO.

BRIDGEPORT BRASS

Offices in Principal Cities • Conveniently Located Warehouses

Bridgeport Brass Company, Bridgeport 2, Connecticut • In Canada: Noranda Copper and Brass Limited, Montreal

STEEL

August 22, 1955

Technical Outlook

DETAILS OUT—The first full-scale atomic power plant for electricity (the pressurized water reactor at Shippingport, Pa.) will be fueled by a 12-ton blanket of natural uranium (U238) that surrounds some 115 lb of uranium highly enriched with U235 isotope. Plates of the enriched fuel will be clad with a zirconium alloy. The natural uranium will be a cohesive mass placed in zirconium alloy tubing. The reactor will have 24 control rods made of hafnium. Both hafnium and zirconium are highly resistant to corrosion in hot water under pressure.

ATOM CONSTRUCTION—The nuclear portion of the plant will be housed in four steel containers enclosed in concrete compartments partially below ground. The vessel to hold the reactor will be 33 ft high. It's a cylinder 9 ft in diameter. Its walls (9 in. thick) will be carbon steel plates and forgings with ¼-in. stainless steel cladding.

ROLLER HOLDER—A work holder is proposed by the British Steel Castings Research Association as a way to hold down dust from pedestal grinders. Made of small parallel rollers, it is mounted over the exhaust duct opening. The rollers are self-cleaning.

EATING HOLES—Cutting through a well casing to tap an oil bearing formation has been the province of explosive devices. Now a chemical (fluoride) method is being used. Report: Clean holes are made in a fraction of a second.

READY—For some 2½-years B. F. Goodrich Chemical Co. has been foundry testing a new-type sand core binding material. Known as Good-rite CB-35, no curing or chemical action takes place when a core is baked that contains it. Baking is complete when water in the mix is removed. Gas information is minimized, collapsibility is good and resistance to overbaking is outstanding, says Goodrich.

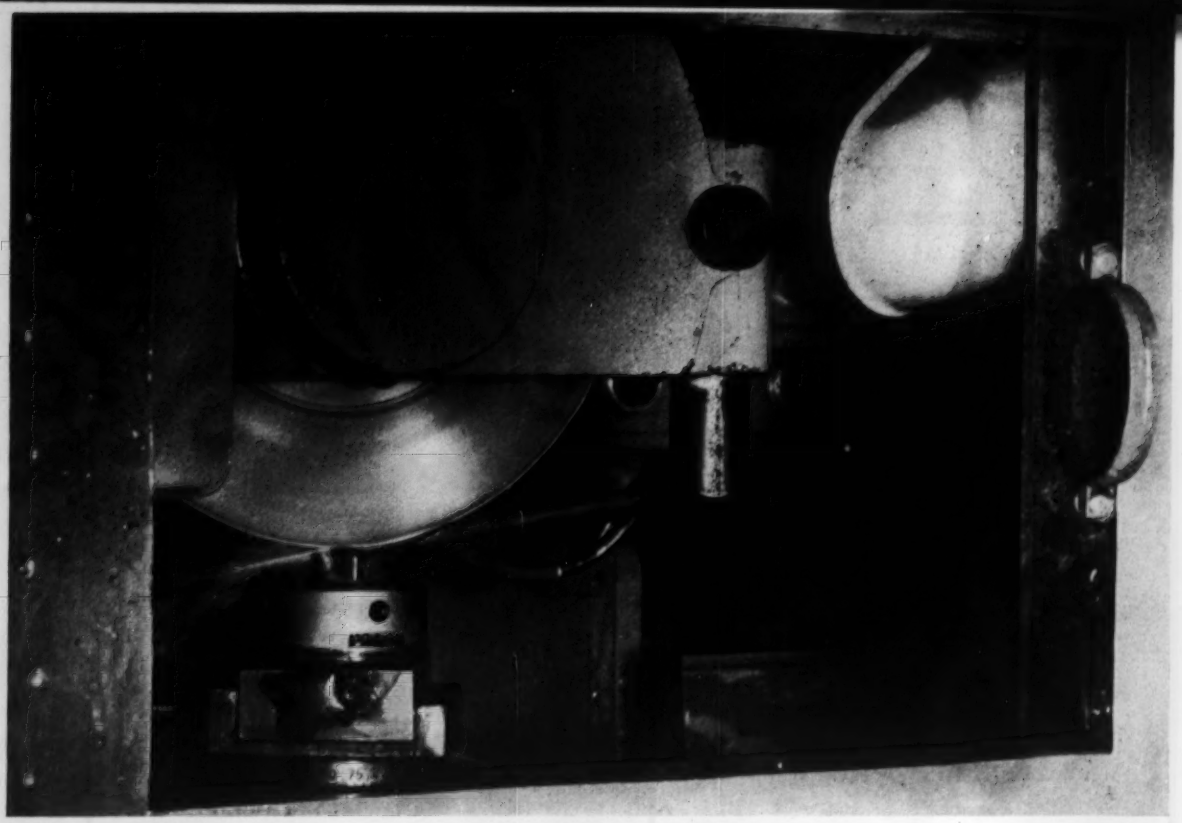
COLOR SIZE—Color and size are related, Pittsburgh Plate Glass Co. has decided after a detailed study. "In general, we can say that the longer the wave length of a colored surface, the higher its value, the greater its chroma, the larger it will appear." But you can't say that red looks bigger than blue. It depends on which red and blue you mean.

DIME-SIZE BATTERIES—Developed by Elgin National Watch, they produce constant voltage for two years. A half-circle and about three times as thick as a dime, they will power an electronic wrist watch under design. Look for them to appear in other subminiature electrical equipment.

BETTER ROTORS—Steel and aluminum helicopter blades soon may replace those made of wood, metal and fabric. All-metal blades are completely interchangeable. Wooden blades must be replaced in matched sets. The metal should cost less and won't rot.

HOW MUCH TIN?—Using x-ray gages of their own design, Jones & Laughlin Steel Corp. operators can tell how much tin is being applied to both sides of the sheet—to within six ten-millionths of an inch. This accuracy can be maintained at speeds up to 2000 fpm. All three electrolytic lines at the Aliquippa, Pa., works are equipped with these gages.

Metalworking Outlook—p. 29 *Market Outlook—p. 91*



This close-up shows the double-hose arrangement that insures electrolyte getting between the diamond wheel and the workpiece

Want To Cut Diamond Wheel Costs?

Electrolytic grinding did it for Pratt & Whitney. One wheel ground more chip breakers in carbide inserts than ten conventionally operated wheels

ELECTROLYTIC grinding of cemented carbide tools can cut diamond wheel costs 80 per cent, production results show at Pratt & Whitney Aircraft, East Hartford, Conn. The United Aircraft Corp. division found that a single diamond wheel used electrolytically outlasts ten or more conventionally operated wheels.

Tool grinding at P&W is a big operation. Last year 1,664,230 cutters of all types were handled, with more than 150,000 tools on work orders for changes or alterations. Grinding is centralized in three departments which employ 388 people on three shifts.

Grinds Chip Breakers—The electrolytic process is being used only in the production grinding of chip breakers on square and triangular solid carbide insert tools. All chip breaker cuts are made and inspected to blueprint specifications.

Equipment: An automatic, electronically controlled rectifier built by Anocut Engineering Co., Chicago and three Gallmeyer & Livingston No. 15 surface grinders. They were built with heavy-duty spindle castings for electrical connection to the rectifier.

Only one grinder has been converted for electrolytic operation. It uses a metal-bonded diamond wheel which is 10 in. in diameter and has a 3/16-in. peripheral face. Grit size is 120 mesh.

Size of Cuts—When set up in cutter grinding, it was found that heavy cuts (¼-in. deep by 3/16-in. wide) gave finishes superior to light cuts (0.015 deep by 3/32-in. wide) made in conventional chip-breaker grinding. As a result, additional resistances were placed in the rectifier, so that the unit became preloaded. This produced the same good finishes found in heavy, single-pass cuts.

On the other G&L grinders, cutting speeds were the same—based on the plunge or single-pass method. They required about 5 to 8 seconds contact to plunge a chip-breaker 0.020 x 3/32 x ⅞-in.

While there has been some tendency for operators to cut more rapidly with the electrolytic equipment, it has been discouraged. Excessive table travel speed results

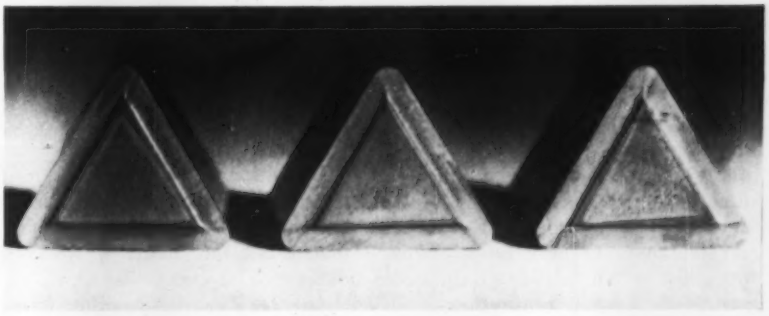
Operator adjusts depth of wheel to set for plunge grinding of chip breakers. This standard machine is easily adapted to electrolytic use

in the diamond wheel getting ahead of the electrolytic action, with a corresponding decrease in wheel life.

For the Records—At the time of this writing, the original wheel on the electrolytic equipment had made more than 20,000 cuts. Wheels on the other two grinders wore out after some 2500 cuts. Since 20 to 30 per cent of the electrolytic wheel remained, it is safe to assume that it would produce between 25,000 and 30,000 cuts about 0.20 x 3/32 x ¾-in.

The saving is even more striking when compared with multiple-pass conventional chip-breaker grinders. Log sheets for 6 x 3/16 x 1¼-in. diamond wheels with ⅛-in. impregnation used for this operation show: 800 to 100. With a 10 x 3/16 x 2 in. diamond wheel for comparison, the range has been 1800 to 2600, depending on the operator's care and use of the wheel.

Based on this number of cuts, the 10-in. wheel operated electrolytically already has outlasted 13 wheels at the lower end of the range and eight at the upper end,



This is what the inserts look like after chip breaker grinding. Note staining and discoloration from the electrolyte. Chips on right-hand tool result from use on the job and not from the grinding

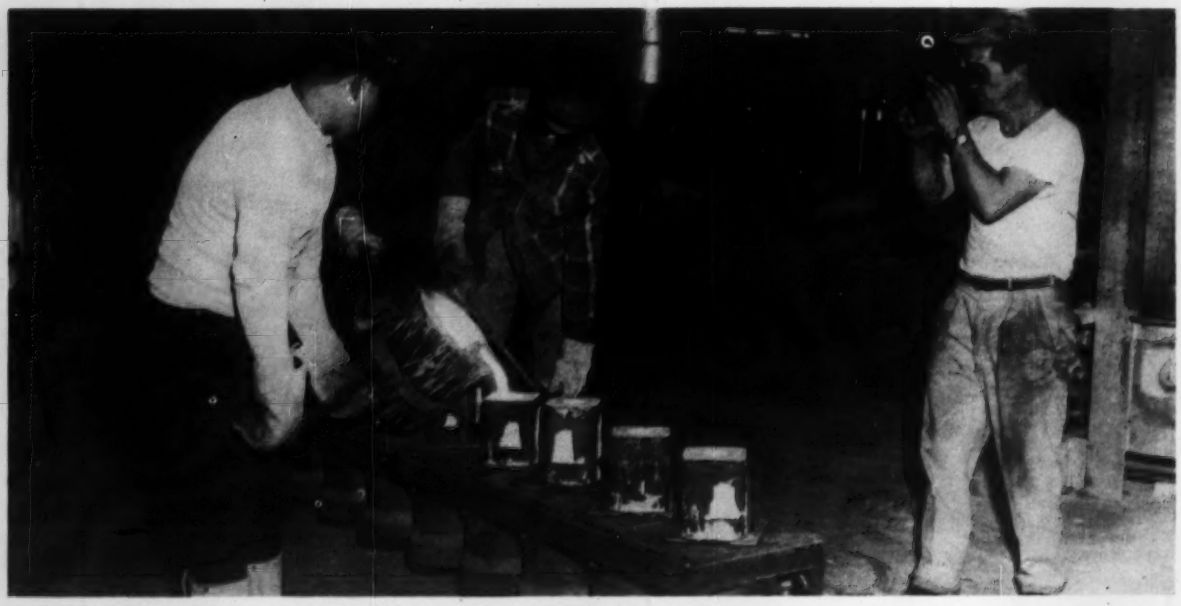
with little or no dressing required to maintain the corner radius of the wheel.

None of the tools electrolytically ground has been rejected by tool inspection for poor quality of grind. Tools used in production showed life equal to those carefully ground conventionally.

Operating Data—Careful control of the electric current supply is essential to success; automatic control is a must.

Once initial settings are established for the material being ground, the rectifier needs no further attention. The setup draws 100 amps at 7 volts with straight tungsten carbide. Edge erosion is eliminated and the finish is uniform.

The conventional coolant feeder that came with the machine did not supply the proper amount of electrolyte. A special coolant feeder provided by Anocut has proved satisfactory. Another modification of the original machine: Work area had to be enclosed more fully to keep electrolyte from being splashed into the machine ways, where it would solidify.



Know the facts and you can profit with . . .

Investment Casting of Carbon Steels

By HOWARD DEROW
Process Engineer
Arwood Precision Casting Corp.
Los Angeles

YOU CAN USE investment casting for carbon, low and medium alloy steels, despite the belief that it's economical only in the highly specialized alloy jobs. Alloy and carbon contents may be adjusted to provide an almost unlimited range of physical properties.

The manufacturer and designer must be familiar with the process and the behavior of the materials cast. Taking these facts into consideration not only decreases ultimate production costs, it also minimizes the cost of raw castings by lowering the foundry's rejection rate.

Improved Castability—When alloy or carbon steels are forged or rolled, the silicon content must be kept low to minimize fabricating difficulties. But silicon is a helpful tool of the foundry. It promotes fluidity, while keeping casting temperatures to a minimum (the foundryman's continual aim).

The investment casting foundry uses 0.60 per cent silicon as the top limit, where wrought steel specifications call for no more than 0.35 silicon. The 25 extra points have no adverse effect on machining but make a world of difference in castability.

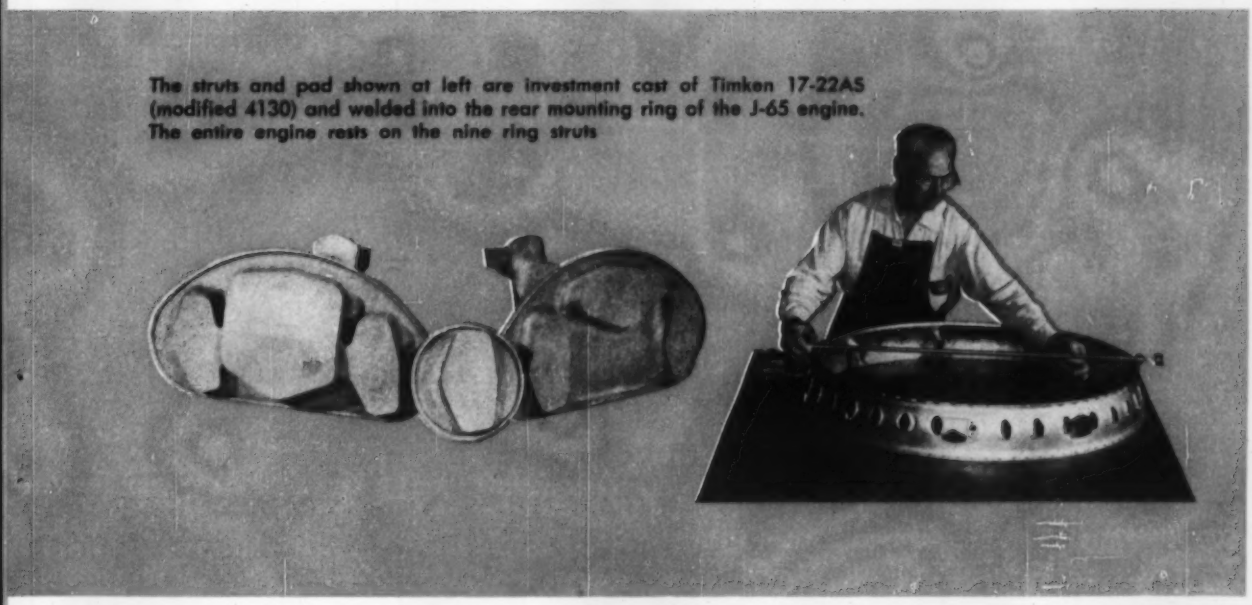
Surface Decarb—Another foundry characteristic which may have a bearing on the final use of the part is the tendency for this group of alloys to be decarburized on the surface of the casting. This can be traced to the excessively slow solidification rate of the metal within the investment mold. Depth of total, plus partial, decarburization, ranges from 0.005 to 0.015 in. and varies directly with the carbon content in the metal.

If a decarbed surface would prove detrimental to end use, a simple carbon restoration treatment can hold the decarburized depth to a maximum of 0.001 in. Decarburization and subsequent recarburization do not harm the strength or suitability of the part.

The heat treat response isn't affected either. In fact, this recarburizing treatment can be performed as an integral part of the heat treat cycle. Of course, carbon restoration is not necessary when carburizing grades are used or where subsequent case hardening is done.

Heat Treating—The user must remember that the microstructure of all castings—not just those produced by the lost wax investment process—have a pronounced cored or dendritic pattern. It is eliminated by forging, rolling or other hot work on cast ingots. The absence of such operations with investment casting makes the problem of heat treating more involved.

This is especially true of those alloy steels containing any appreciable amount of carbide-forming elements, such as chromium and molybdenum. The as-cast structure can be put into more suitable



The struts and pad shown at left are investment cast of Timken 17-22AS (modified 4130) and welded into the rear mounting ring of the J-65 engine. The entire engine rests on the nine ring struts

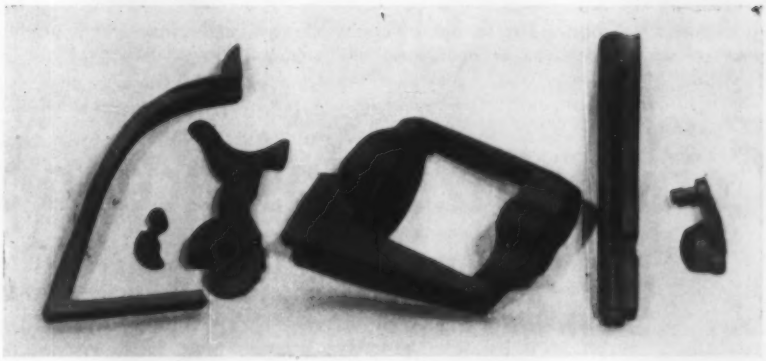
form by homogenization, a treatment that can utilize standard heat treat cycles to get desired hardness. Generally, a simple normalizing treatment will do the job, but in most cases it is more advantageous to heat the parts to 100°F above standard normalizing temperature.

With some alloys, 4130 and 4140 for example, it is beneficial to give the parts a double treatment, the first at the higher temperature (100°F) than the second. Abnormally large grains will not result because of later heat treating.

Grain Size Problems—Many engineers are convinced that castings ordinarily will have extremely large grains; that if small grains are required, it is best to stay away from investment casting. The grain size of castings is somewhat larger, but not so large as commonly believed.

Deoxidation of the steel with aluminum keeps grain size to a minimum. One big indication: By far the biggest volume of investment goes into aircraft applications. Specifications demand minimum grain size.

What About Machining?—Since we are dealing with as-cast structures, they may require special attention for best machining results. The problem is not serious



Each of these pistol parts is an investment casting made of either 4130 or 6150 steel

with carbon and lower alloy steels but increases as the carbon and/or alloy content increases.

Segregation which comes during solidification can cause hard spots. The repeated shock of hitting them greatly shortens tool life. Proper normalizing or annealing before machining can eliminate this difficulty through partial homogenization of the structures. This is good insurance for proper heat treating response after machining.

More on Hardness — Generally, it's not the best practice to machine castings in the as-cast condition. Aside from hard spots, hardness of the entire casting may be too high for good machinability. The investment and casting cool faster than furnace cooling or annealing, but much slower than air cooling or normalizing.

As carbon and alloy content increases, hardenability of the entire casting increases until an anneal before machining is a must. The foundry generally can tell you when annealing is required and will do it to speed up handling and processing.

By working with the foundry, problems peculiar to each part can be eliminated beforehand, making for a better and cheaper product. That is why it is best to give the foundry as much information as possible about final fabrication steps and part use.

Visual inspectors pass parts to operator who charges and places them on the conveyor. Parts get a spray of fluorescent magnetic particle solution next

Conveyorized Inspection Speeds O.K.'s

Switch from dry, magnetic particle method to wet set up is more accurate, too. Saved man-hours are put to work in other inspection jobs

By WILLIAM E. DEAN
Associate Editor, Chicago

MAGNETIC PARTICLE inspection is over 300 per cent faster than it was on some parts at Rockford Drop Forge Co., Rockford, Ill.

Five men completely inspect about 1300 connecting rod caps an hour. Two men visually inspect for size, shift and fill gaps; three do magnetic particle inspection for cold cuts, quench cracks and seams.

Before, two men did the magnetic particle inspection (about 160 pieces an hour), using the dry powder method. The increase was brought about by standard Magnaflux units with a new auxiliary conveyor system.

The Setup—After visual inspection an operator magnetizes parts and places them on the stainless steel mesh conveyor. A special circuit enables the operator to clamp the part in place and magnetize it in one motion—rather than two. Parts are carried through a wet-type bath, using fluorescent magnetic particles, then into the inspection booth. Two inspectors using "black" lights check pieces which then pass through a demagnetizer and drop into boxes. On long runs, operators change positions — inspection to charging, etc.—to prevent job monotony.

Carl Ree, metallurgist at Rockford Drop Forge, says the new method is considerably more accurate than the old. Another factor: Man-hours saved by greater productivity are put to work on other jobs in the inspection department.

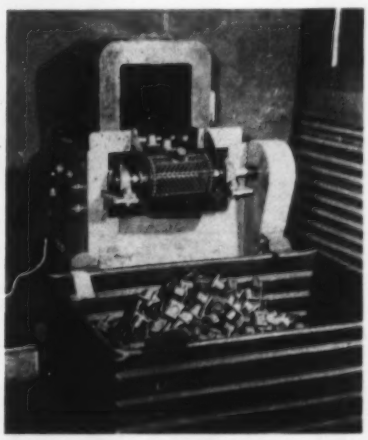
Speeds Vary—Conveyor speed is adjustable to parts of different sizes—some of Rockford's forgings are 14 in. long and weigh over 5 lb. Speeds on the Magnaflux auxiliary unit range from 10 to 40 fpm; the conveyor load is 15 lb per lineal foot. Conveyors pass through 10 x 10 in. openings.

Equipment for the dry powder

Inspectors are positioned on each side of the conveyor as it passes through darkened booth. Each has a button for emergency conveyor stops

method didn't end up in the scrap pile. It was set up in the forging plant where hourly hot inspection checks are made of forgings from every hammer and upset machine.

"Dividends here are obvious," officials point out. "We can check for die alignment, wear, finish, seams, etc., in the first stage and make corrections when necessary before we get a lot of time and money tied up in additional operations."



As they leave the inspection booth, parts pass through this demagnetizing unit and drop into the bin

MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

PENDING stockholder approval, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., will purchase the outstanding capital stock of the Cincinnati Bickford Tool Co., Cincinnati, and will acquire the Kaukauna Machine Corp., Kaukauna, Wis., on an exchange of common shares.

Cincinnati Bickford's 67,314 shares are to be picked up for $80 a share. Total price would be $5,385,120. Kaukauna Machine's 125,000 outstanding common shares would be traded for 40,000 shares of G&L common.

Ralph J. Kraut, Giddings & Lewis' president, says the actions are part of G&L's expansion and diversification program. In addition to the new machine tool lines, Giddings and Lewis will take over the Kaukauna foundry operation, which Kraut cites as highly desirable for integration of company operations.

Cincinnati Bickford employs 400 people. Its 1954 net sales were $8.2 million; net earnings were $892,000. Earnings in the first half of 1955 were $149,802.

Kaukauna Machine employs 250. It has 1954 earnings of $67,391 and first-half earnings of $40,582 in 1955.

Approval of the whole plan will be asked at a special G&L stockholders' meeting scheduled for Aug. 31.

Customer Service

"The biggest thing a screw machine builder can do for the screw products salesman is help him keep down the cost of his product."

Speaking to members of the National Screw Products Association in Cleveland, Henry D. Sharpe Jr., president of Brown & Sharpe Mfg. Co., announced that his company is about to launch a program that will keep a full-time engineer touring customers' plants. It's part of the company's effort to coordinate its activities with those of the customer.

The engineer's job will be to find out how Brown & Sharpe machines are being used. He'll also try to find out why many users are lagging in their machine replacement programs, what improvements or developments in B & S service are needed. He'll also investigate jobs that have left the screw machine industry, see what can be done to keep similar work from going to other processes.

The engineer will report directly to the head of Brown & Sharpe's engineering staff.

Guarantee Lengthened

Cincinnati Shaper Co. announces that as of Sept. 1, 1955, it will guarantee all machines against faulty materials or workmanship for five years. Current practice is a one-year guarantee.

The guarantee will apply to all the company's machine tools, including press brakes, shapers and shears. The company states that replacement parts will be shipped f.o.b. the customer's plant.

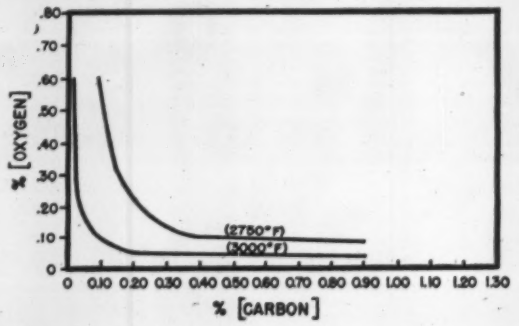


Fig. 1—Higher bath temperatures result in lower oxygen

Production Control of Quality Steels

Control of the amount of oxygen and the type, size and frequency of oxides in steel is a must. Temperature has to be kept within narrow limits, too

By R. W. GRAHAM
General Superintendent
Duquesne Works
U.S. Steel Corp.

ACCURATE control is essential to the successful production of quality steels in open-hearth and electric-furnace shops. This includes temperatures at tapping and pouring and during various stages of the melting operation.

With immersion-type thermocouples to indicate and record bath temperatures, and melting personnel who thoroughly understand the importance of temperature control, Duquesne has been able to tap 80 per cent of all heats within a 30°F range. Heats falling outside this range usually are not far out.

Oxygen Important—Fig. 1 shows the familiar oxygen-carbon equilibrium in liquid steel at two different temperatures. Higher bath temperatures result in lower oxygen content for any given carbon content, and many features of the Duquesne quality control program make use of this well-known relationship.

While production of rimmed or capped steels requires a relatively high degree of oxidation of the

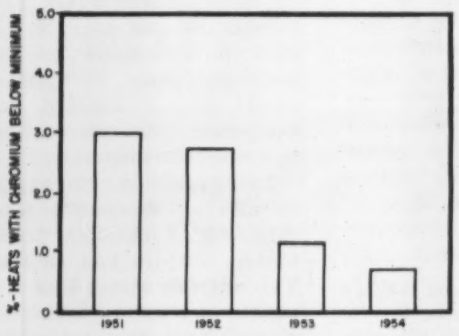


Fig. 2—Fewer heats have been low in chromium

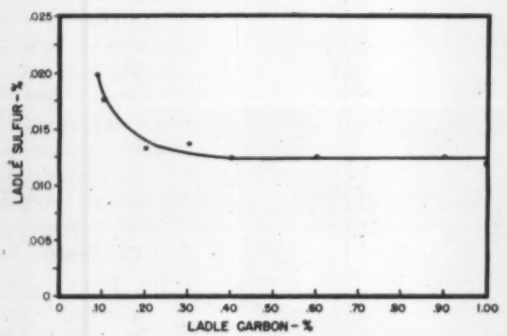


Fig. 3—Sulphur content in high carbon heats is lower

LONGFELLOW'S
VILLAGE BLACKSMITH

Dear to the heart of every small town boy was the shop memorialized in Longfellow's Village Blacksmith, pictured here from an old woodcut. As late as fifty years ago, the smithy was the focal point of rural America's metalworking industry.

Crafts and craftsmen through the ages

NUMBER THREE OF A SERIES

Enlargements of illustrations available upon request.

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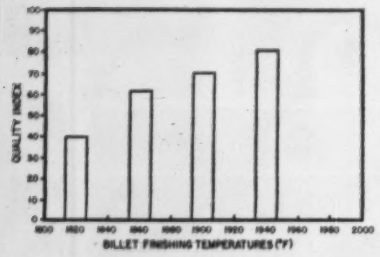


Fig. 4—Effect of finishing temperature on billet surface quality

steel bath, it is frequently necessary to maintain a low oxygen content in the interest of meeting close chemical specifications, in maintaining low sulphur contents and particularly in controlling oxide inclusions.

Consider Stainless—These steels must meet minimum chromium requirements, but upper limits frequently are determined by hot-working characteristics. Higher chromium heats with unsatisfactory chromium-nickel relationships usually are difficult to roll and in most instances result in abnormal material losses and high conditioning cost.

For these reasons, and in the interest of conserving chromium, it is important to control this element within the narrowest possible limits, preferably in the band near the lower portion of the specification range. Such a practice entails the hazard of missing the objective of the low side and ending up with a heat that is out of specification.

Control Oxygen Instead—This practice has materially reduced this hazard as shown in Fig. 2. The chart shows the percentages of heats which finished below the specified chromium content during the last four years. The practice in this instance involves slagging off the oxidizing slag at the highest possible temperature level and at the highest posible carbon level consistent with the end product being melted to maintain low-oxygen content in the bath.

The marked decrease in the out-of-specification heats in 1953 and 1954 was obtained with this practice, plus the use of higher silicon residuals during the refining period. With silicon residuals of about 0.50 per cent, chromium recovery was high and uniform. The practice involves frequent and rapid silicon and chromium determinations which have been facilitated greatly by a direct-reading spectrograph.

Carbon Vs. Sulphur—The oxygen level of the bath has a marked effect upon desulphurization by the slag. Since carbon is a major factor in controlling oxygen, it could be expected that the sulphur content in high-carbon heats would be lower than that in low-carbon ones. This is shown to be true in Fig. 3.

However, it is possible to maintain low-sulphur levels in low-carbon heats by silicon-bath deoxidation. In a low-carbon, chromium-molybdenum steel, the average sulphur content was reduced from 0.017 to 0.010 per cent by the addition of silicon to the bath.

Oxygen and Cleanliness—Although the nature and distribution of inclusions are influenced by the types of deoxidizers used, the quantity of oxide inclusions present still is a function of oxygen in the bath. We reviewed a series of heats of AISI 4320 bearing quality steel and found that an average of one heat in five did not meet the cleanliness standards for bearing quality when the bath was oxidized to correspond with a 0.12 per cent, or lower, carbon level. The successful solution to this problem involves mandatory slagging off at carbons above 0.12 per cent and diversion of the heats if they are oxidized below this point.

Control, of the type described, has been most beneficial in improving cleanliness ratings of many grades of steel. It has resulted in improved performance of bearing steels; and it has helped materially in the improvement of physical properties where extreme stresses are encountered in fabrication.

External Soundness, Too—If the requirements of our customers could be satisfied by internal soundness alone, the job would be relatively simple. However, the buyers of shell, bearing, gear and automotive steels also require a product that is relatively free from external defects and meets close dimensional and straightness tolerances.

Soaking-pit operations have most significant effects upon steel surface. It is not possible to establish a universally applicable heating pattern since various types of steel require different treatment. In general, quality is favorably affected by minimum transit and heating times that are consistent with the thermal characteristics of the steel.

A review of the wide diversity of products produced at Duquesne seems to point to the low-carbon alloy and the resulphurized grades as the ones most sensitive to damage as the result of improper soaking-pit practice. Ingot cracks, burned steel and a seamy product are the inevitable results if careful controls are not maintained, if transit times are excessively long or if heating times are too long or too short.

Rolling Practices—Heating and mill-drafting practices at Duquesne are based upon finishing the rolling operation at prescribed temperatures. Fig. 4 illustrates for C-1036 steel the importance of finishing temperatures. In this instance heating temperatures were adjusted to secure the higher finishing temperatures and the resultant substantial improvement in quality.

Unfortunately, the various measures described, instead of eliminating the need for conditioning, have served only to minimize conditioning of blooms and billets. Successful production of blooms and billets for conversion into the products referred to earlier requires more than superficial removal of visible defects. It requires removal of all defects. Conditioning practices must recognize differential product requirements

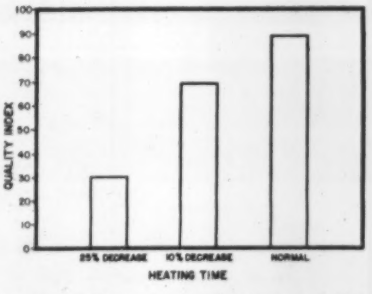


Fig. 5—Effect of heating time on billet quality

and must be adapted to the ultimate end use of the product.

Heating Specifications—As in the primary mills, proper heating practices must be followed to insure a sound bar product. Furnace atmosphere, heating time and drawing temperatures must be specified for each grade to insure freedom from seams, pitting and other surface defects.

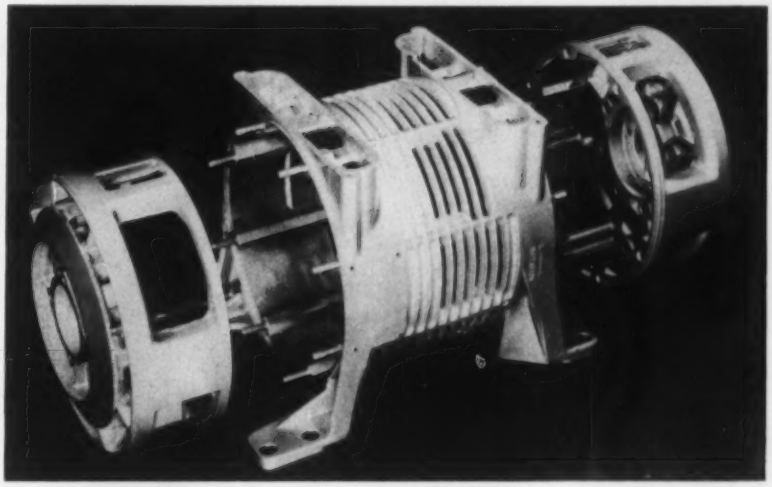
The data in Fig. 5 represent experience with the rolling of 1½-in. rounds from 4 x 4 billets and show that decreasing the heating time by 25 per cent causes marked deterioration in surface quality. This serves to illustrate that maximum rolling rates are not necessarily controlled by mill speeds, but rather by available heating facilities.

No discussion of the production of quality steels would be complete without mention of the close controls required in heat treating and finishing them to meet customer requirements. Products covering the full range of H-band and martensitic stainless steels require unerring control and extreme flexibility in heat treating practices to compensate for minor chemistry variations.

The controlled practices described represent only highlights of an extremely complex program designed to produce the highest quality possible with available facilities and within the boundaries of present-day metallurgical knowledge.

Basic Philosophy — Increasing discards at the primary mill can improve etch-test experience; excessive conditioning can salvage substandard materials; and critical inspection can improve the average quality of the product remaining after rejected bars have been removed, but none of these procedures is satisfactory from an economic standpoint.

The described program involves diversion of the product to less critical applications or even scrapping it at the earliest possible point at which its processing becomes questionable. This somewhat drastic approach has proved to be sound from both metallurgical and economic standpoints. It has saved processing costs of questionable material.



Magnesium diecastings for Jack & Heintz inverter

Diecasting Halves Housing Cost

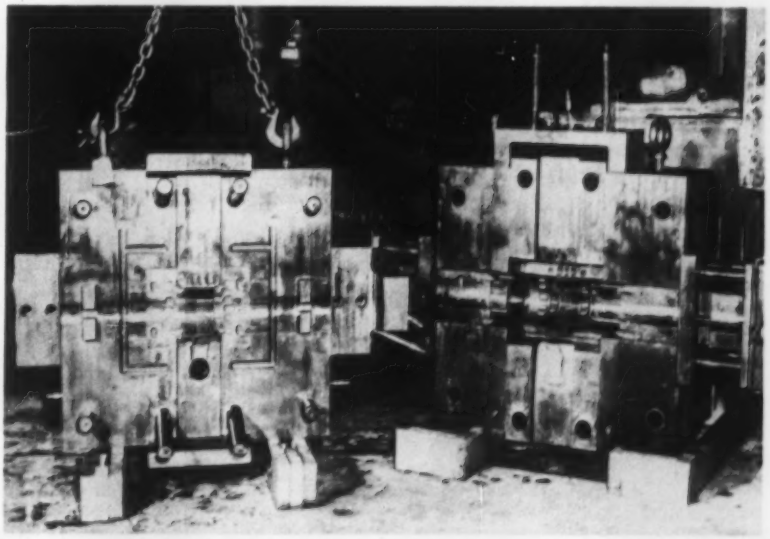
A DIE CAST magnesium inverter housing spelled out 54 per cent savings for Jack & Heintz Inc., Cleveland.

The housing for a former model of the aircraft a-c/d-c inverter has been sand cast. The new model was redesigned to take full advantage of intricate coring, close tolerances and minimum machining possible through die casting.

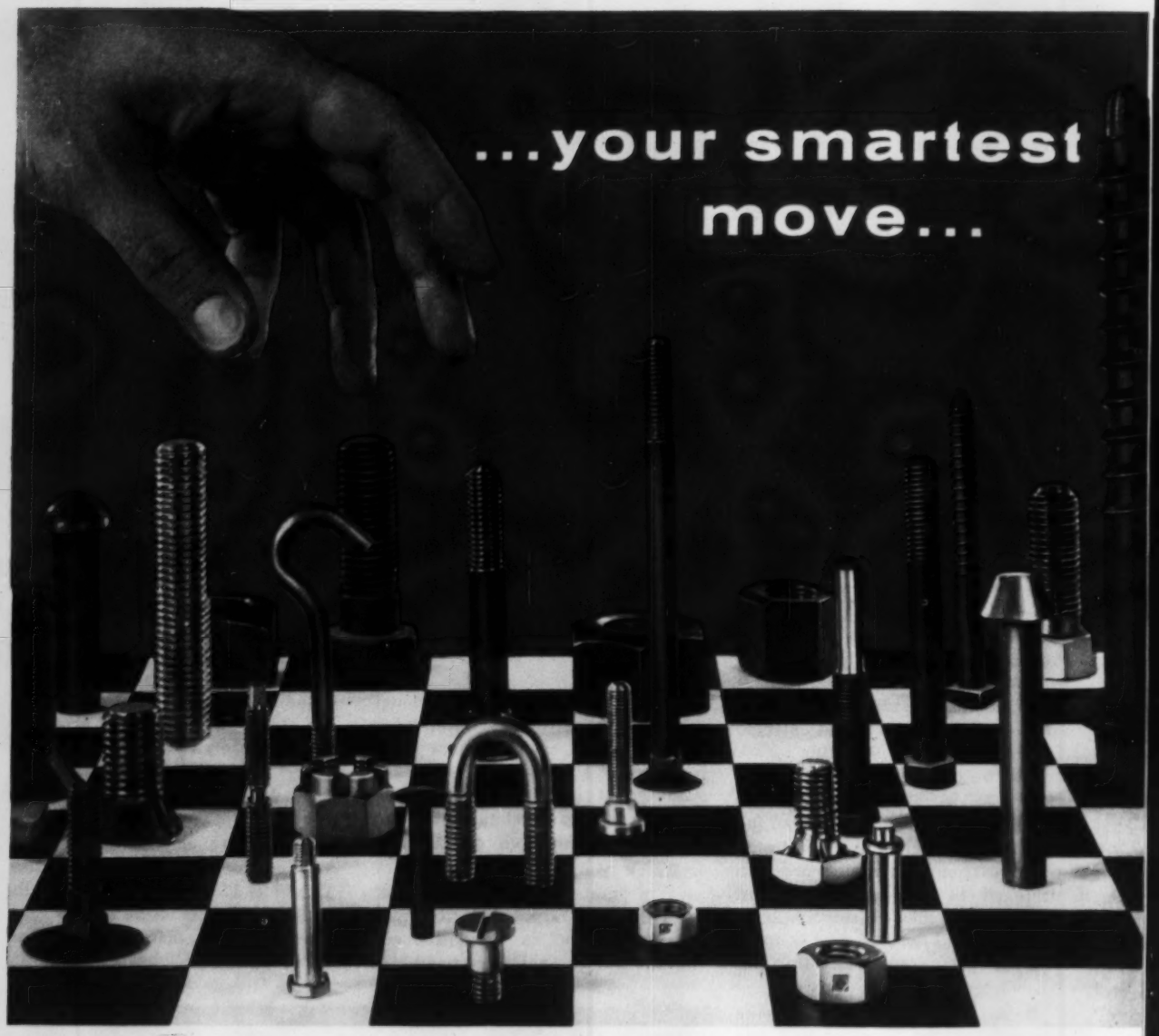
Quick Return—The housing, 7 in. in diameter and somewhat deeper and longer with its integrally cast feet, is being produced on the country's largest magnesium die casting machine, according to the American Die Casting Institute.

In addition to stationary cores, 4 sliding cores are incorporated in the one-cavity die which produces approximately 5000 housings a year. Cost of the die was amortized on the first 1800 pieces.

SAE 501 (ASTM Spec. B94-47T, Alloy AZ91) is the alloy used. The completed inverter measures 17 x 7 x 11 in. and weighs 44 lb. It delivers 1500 va at 50,000 feet. The units are being installed on Douglas C124 Globemasters.



Dies used for casting the inverter housing



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Whatever your need for fasteners, your smartest move is to contact Republic. You'll get the jump on time and check excessive procurement costs because you eliminate blind alleys in locating the particular fasteners your job requires.

Republic's Bolt and Nut Division manufactures and stocks over 20,000 standard types and sizes of fasteners. In addition, over 8,000 "specials" are available such as battery bolts, bent bolts, and "Nylok" nuts. And, if you need something *still* different, Republic can draw on over 100 years of experience to handle big-volume contract manufacturing of any type of headed or threaded product, designed especially for you.

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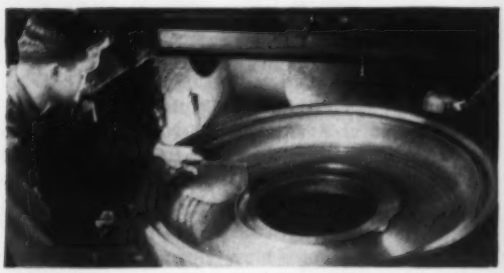


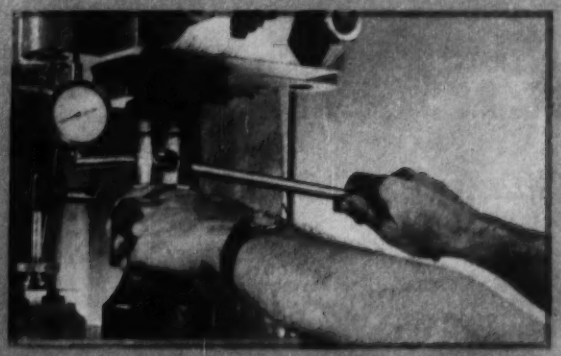
IMPROVE QUALITY OF PRECISION CASTINGS. Through the use of Chateaugay, Republic's exclusive premium pig iron, you can produce superior castings *every time*. You'll get a fine surface finish, uniform grain structure and excellent machinability which add up to real economy. Any necessary hand finishing is minimized, too. Get full information on Chateaugay Pig Iron, today. Just mail the coupon.

REDUCE WEIGHT AND IMPROVE DESIGN. "Beefing-up" to provide a safety factor won't work with moving parts. More weight means more wear . . . more torque to start . . . more energy to stop. The answer: Call Republic, world's largest producer of alloy steels. Republic can supply the right alloy to meet your required margins of strength and long life *without excess weight*.

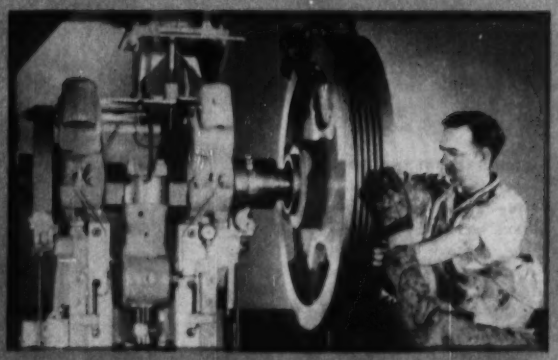
Get the Most Out of Your Press

Set up a regular maintenance program. Make scheduled checks of such parts as the clutch, bearing surfaces and lubrication system. Replace them immediately if they're worn

E. W. Bliss Co., Canton, O. will premiere a 25-minute movie called "Power Press Maintenance" at the NMTBA show in Chicago, Sept. 6-17. This article is adapted from the movie.



Use a jack and a dial indicator to check cumulative clearance in shaft and connection rod bearings



In sliding the flywheel onto the shaft, take care not to mar the journals or bearings

ANY PRESS, even though it is ruggedly built and skillfully designed, needs regular care.

A detailed system of maintenance, as recommended by pressmakers, will assure maximum usefulness and long service life.

The Clutch—Heart of a press is its clutch. A vigilant maintenance man should anticipate normal wear of this vital press organ as well as other operating components.

On positive-type clutches, such as the Bliss rolling key clutch, the clutch latch, rolling key, backing pawl and clutch hook get a lot of wear. When wear is excessive, these parts should be replaced promptly.

With the larger presses, which usually require friction - type clutches, servicing of clutch and brake is quite simple. Remove a few bolts and both the clutch and brake lining are easily replaced.

Friction clutches of the Bliss-type "G" (multiple-disc, crankshaft-mounted units, air actuated and spring released) do not require adjustment. However, the keys in the shaft should be checked regularly for wear.

Lubrication—An important detail in preventive maintenance is repeated checks of the lubrication system. For example, the system on a 21S Bliss inclinable press consists of a pump or lubricator, tubing and metering units.

The metering unit is a flow control fitting which maintains the correct oil film at each bearing. It has three parts: A metering orifice, a felt filter and a check valve. Don't attempt to adjust, disassemble, blow through or drill out meter units, says E. W. Bliss.

High production presses usually are equipped with a lubricator oil flow to different bearing surwhich can be adjusted for rates of

faces. This lubricator has a hand crank to allow forced feeding of oil to the bearing surfaces during heavy production runs or when starting up the press. When a press is new, the oil flow should be generous. It can be cut down later.

Limit Switches — Inspection and servicing of various units is of equal importance. For instance, on larger presses, limit switches are used to position the slide correctly.

The switch segments should be checked and tightened periodically. The spring tension of the fingers also should be checked. The copper segments should be cleaned thoroughly with a solvent.

Don't neglect the mounting strip. It can accumulate enough oil and dust to cause electric current leaks from one finger to another. Constant vigilance in keeping equipment clean and adjusted properly will result in continued first-class press operation.

Gib Adjustment—A punch press that is out of line or square may do considerable tool damage. A constant check on the gib adjustment will help keep the slide square with the bed of the press.

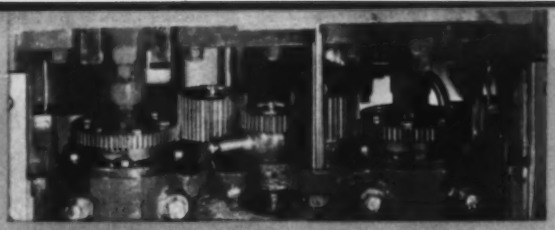
Adjustment between gib and slide is made with a feeler gage. When the gib is in proper adjustment, tighten down lock nuts and run the press for a short check.

Bearing Surfaces—Other bearing surfaces also must be given periodic checks. With the slide lowered to its limit, the use of a jack and dial indicator between bolster and slide will show the cumulative clearance in shaft and connection rod bearings, when the jack is raised and lowered.

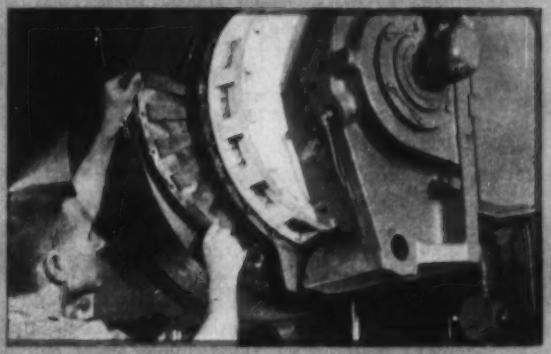
On inclinable preses, one of the bearing clearances most often neglected is that of the ball joint. Most clearance troubles at this spot can be eliminated by removing one or more of the plastic shims provided for that purpose.

If removing the shims does not provide proper clearances, then it is necessary to check the ball, ball cap bushings and ball seat. The ball cap bushings which form the upper half of the ball socket are easily replaced.

The ball of the connection screw should be checked with a micrometer for flat spots or excessive wear. If necessary, the ball seat itself can be replaced.

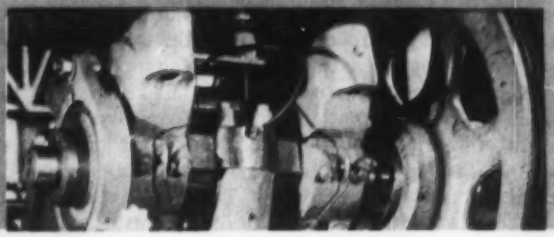


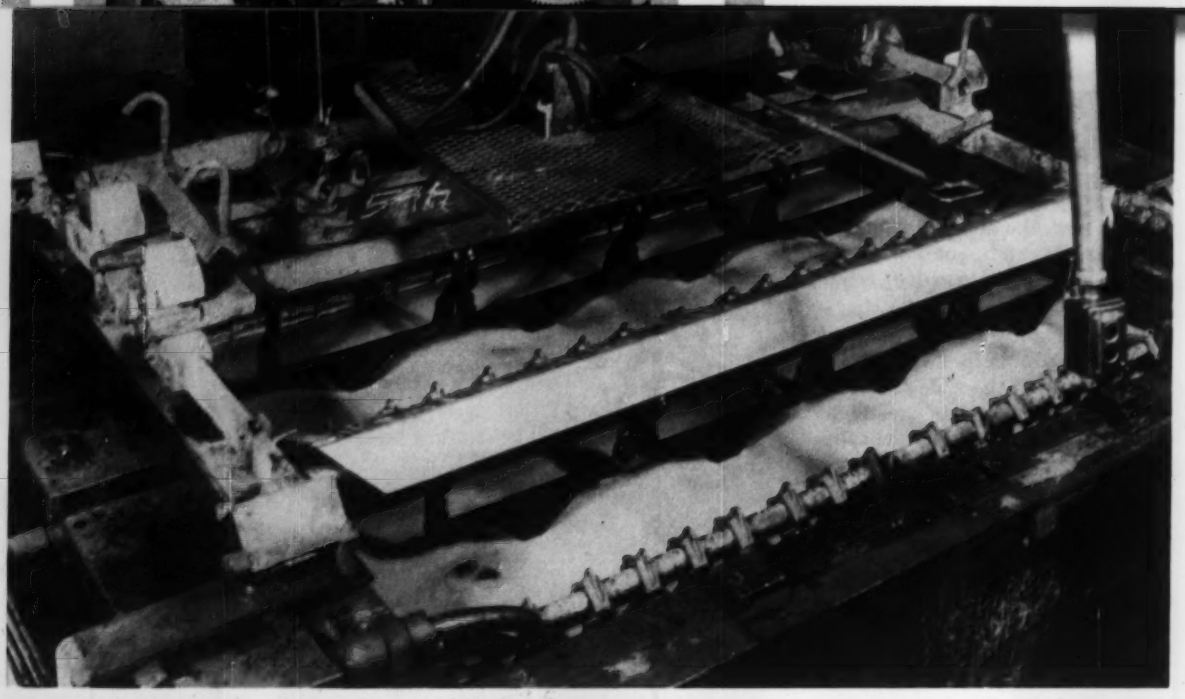
Parts department at Bliss' Hastings, Mich., plant. Users should keep selected spare parts on hand, too



Friction clutch linings, like on this straight-side press, are easily replaced

Constant checks on gib adjustment helps keep slide square with bed of press and prevent tool damage





Foam on chromium plating bath traps mist to make . . .

A Better Place to Work

A NEW CHEMICAL not only lives up to the claim made above; it more than pays for itself by cutting chromic acid waste.

The fluorochemical is made by Minnesota Mining & Mfg. Co. A new type surface active agent, it contains a fluoro-carbon chain which gives the compound high stability and surface activity in the strong oxidizing solution used for chromium plating.

Platers know the fluorochemical better as "Zeromist." That's the name the Udylite Co., Detroit, gave it after testing it as a mist control agent.

Basis—Gases evolved by electrolysis in chromium plating are enclosed in bubbles which have a high surface tension. They burst violently at the surface of the bath and throw out a fine mist of chromic acid droplets.

The corrosiveness and toxicity of this mist and its contaminating effects on other plating baths require vigorous exhaust ventilation over the tanks—to carry away the mist formed in a 2000-gallon tank, an exhaust rate of 10,000 cfm may be needed.

More Problems — The loss of chromic acid through mist and spray amounts to some 30 per cent of the total used. It goes up the exhaust stack and may create an outdoor air pollution problem.

Chromic acid exhausted, plus that carried out on the work as dragout, is considerably more than that used for the plated coating.

The mist trouble has been around a long time. People looking at the problem knew that low surface tension and a foam blanket produced by a surface active agent would help prevent or minimize the mist.

The catch: Until the fluorochemicals came along, no surface active agent could be found to resist the powerful anodic oxidation going on during chromium plating.

Stays Put—"Zeromist" is completely stable in chrome baths. It gives the plating solution a low surface tension. This, together with film stability of the bubbles in the foam blanket on the surface of the bath, reduces spray and mist significantly.

Tests were conducted by Udylite in co-operation with the Detroit Department of Health to measure chromic acid in the air above plating tanks at several plants.

In one where bumper guards were plated, chromic acid measured 0.002 to 0.009 mg per cubic meter of air with ventilation turned off. (Equipment: a 7 x 7-ft tank, using 20,000 amp.) This is considerably below the allowable concentration of 0.1 mg chromic acid per cubic meter of air.

Stack discharge at three Detroit plants showed little chromic acid.

Save Here, Too—Reduction in drag-out losses is an important point for many plants, especially in view of pollution legislation.

The plating plant of Bechtel-McLaughlin Inc., Sandusky, O., reports that its plant waste water effluent normally contained 36 ppm total chromium. With the new fluorochemical on the job it has dropped to an average of 1.5 to 3 ppm.

Chromic acid is saved, too. Weekly consumption dropped from 132 to 39 lb. The amount of anti-mist pellets used is ½-lb per week.

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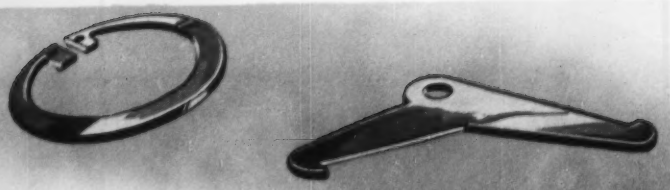
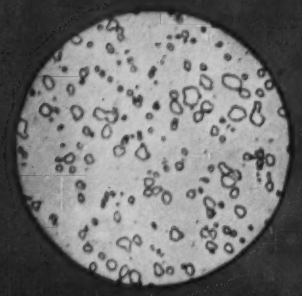


consistent uniformity!



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Pantograph-Milling Machine Works in Three Dimensions

This versatile, tracer controlled production machine engraves, profiles, die cuts and mills.

Pantograph ratios range from 1:1.5 to 1:10. Cutter and tracer heads may be transposed for making enlarged reproductions as well as reduced ones.

An aligning bar is used for setting cutter and tracer points in perfect alignment for accurate three-dimensional reproduction.

A forming guide bracket holds special forming guides when engraving is done on concave or convex surfaces. This assures accurate transfer of the design to the workpiece.

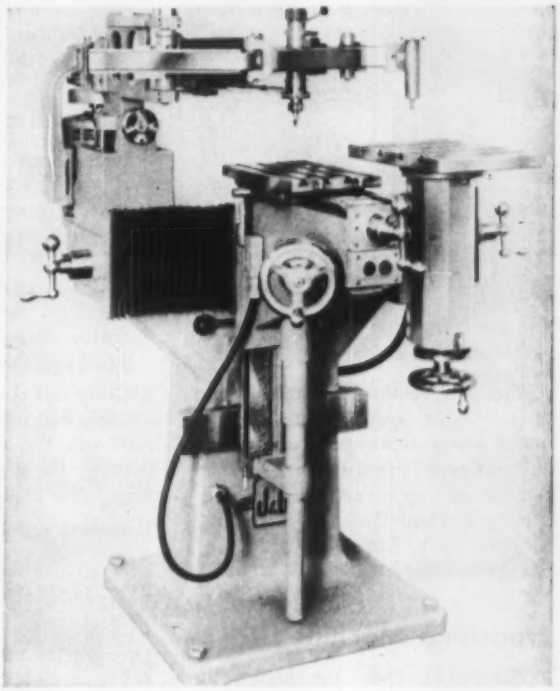
Spindle speed is infinitely variable from 1000 to 12,000 rpm under instant, fingertip control.

The ground worktable is 8 x 14 in. Its vertical feed is 13½-in., its crossfeed 14 in.

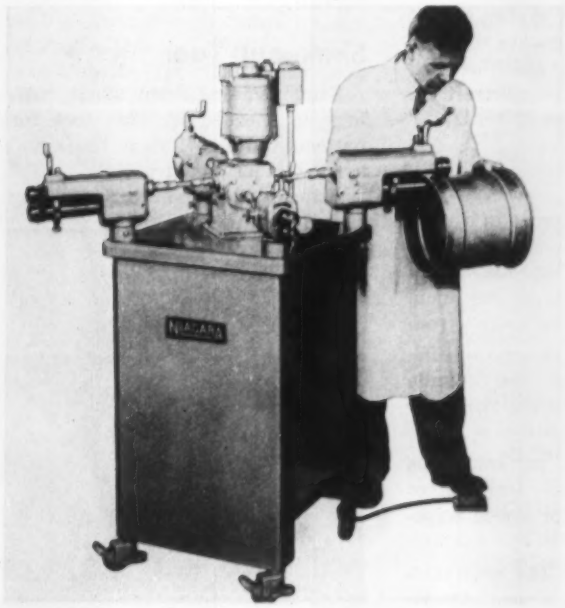
Longitudinal feed of the worktable is 8½-in. for work under 5 in. thick. For work over 5 in., it is 5½-in.

The copy table, also machine-ground, is 10½ x 16 in. It swivels 360 degrees. Vertical feed is 7 in., crossfeed is 6½-in.

Both rapid (0.225 in.) and fine (0.025 in.) feeds of the cutter are controlled by the same lever. *Write*: Production Tool Division, Johnson & Bassett Inc., Worcester, Mass. *Phone*: Pleasant 5-1216



Power Table Speeds Output



Here is a power setup for jobbing and production sheet metal shops. Mobile, it is accessible to any operator at his work station.

The motor drive is actuated by two foot treadles connected to opposite sides of the table. The treadles can be positioned quickly for convenient use by the operator as he moves from one position to the next.

A tap on the treadle will jog the rolls on any machine. The power unit is equipped with a reversing switch to change direction of roll rotation.

A ¼-hp, 110-volt, single-phase, alternating-current motor is flange mounted on a worm-gear speed reducer which operates in an enclosed oil bath.

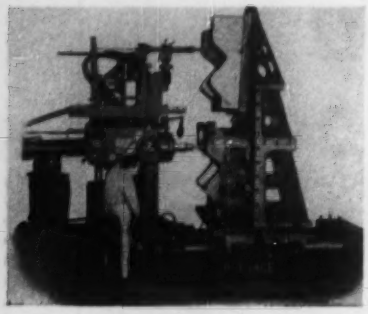
A deep-throat combination machine, a throatless unit, a deep-throat beading machine, a throatless crimping and beading machine, a double seamer and setting down machines can be selected for use on the power table.

Steel universal joints and coupling shafts make connections fast and easy. Table sockets make it easy to attach machines. *Write*: Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11, N. Y. *Phone*: Taylor 4070

NEW PRODUCTS and equipment

Duplicating Machine

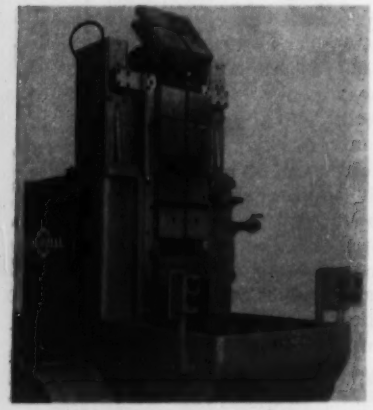
Horizontal boring, drilling, milling and duplicating are done in one setup. There are 36 spindle speeds, ranging from 8 to 1000 rpm, and 18 milling feeds to the table, saddle and head.



The box section is cast in one piece. Outer base walls directly under the column are continuous, without cored openings and further reinforced by vertical ribbing. *Write*: Portage Machine Co., 1049 Sweitzer Ave., Akron 11, O. *Phone*: Blackstone 3-7191

Broaching Machine

The wide face for mounting broaches on the chain-mounted rams and the wide work platen that handles indexing or stationary fixtures give versatility. Practically continuous metal removal is achieved by mounting a series of broach carriers on an endless chain.



Broach carriers move down on the front of the machine, enter precision ways before contacting the work. The machine has an effective broach length of 12 ft 10 in. although it is only 11½-ft high.

Cutting speeds can be varied from 10 to 50 sfpm. A 25-hp alternating-current motor is used. No pit is required by the machine; the operator platform is 33 in. high. The unit weighs 18,000 lb, uses a 73 x 152-in. floor space. *Write:* Colonial Broach & Machine Co., P.O. Box 37, Harper Station, Detroit 13, Mich.

Coil Spring Automation

Here is an automation machine that works with standard heating furnaces and roll-forging press equipment. It preheats and points the ends of 618 coil spring rod blanks an hour. The rods are 12-ft long and ¾-in. in diameter. One operator does the work.

Air cylinders are used to avoid high-temperature operating problems. An inprocess gaging unit positions the rods axially for roll forging to assure uniform pointing, regardless of the rod length.

The unit is about 40 x 24 x 9 ft. Welded steel frame construction is used throughout. The design can be made in a variety of models to suit roll-forging requirements. *Write*: Expert Automation Machine Co., 17144 Mt. Elliott Ave., Detroit 12, Mich. *Phone*: Twinbrook 1-4327

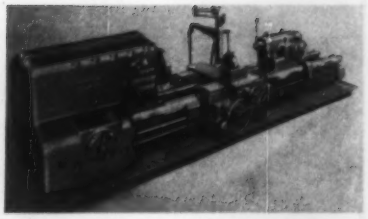
Lathe

This 32-in. lathe comes in a variety of bed lengths. Models have 18 or 27 spindle speeds. Sixty threads, from ½ to 30 per inch, can be cut. The feeds range from 0.004 to 0.240 in. per revolution.

The tailstock has the spindle control handwheel in the front for ease in operating.

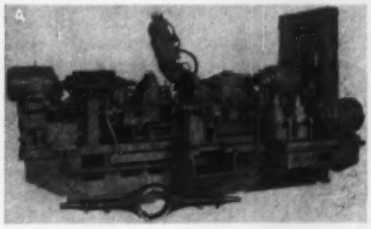
Speed control is instantaneous and direct reading. Only three levers are needed for speed selection.

A 40-hp motor is the maximum size recommended. *Write*: American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati 2, O. *Phone*: Parkway 1-2800



Housing Machining Tool

This self-contained unit can process six different housings. It eliminates many handling and setup operations. The machine drills 20 holes in the housing, 10 from each side, plus one vent hole.



Hydraulic and coolant tanks are contained in the base of the unit. The electrical panel is mounted on the base.

Coolant is piped to each bushing plate. A manifold takes it to the precise point of application. Retooling for model changes is simple; only the drill heads need be modified. *Write*: LaSalle Tool Inc., 380 E. Outer Drive, Detroit 34, Mich. *Phone*: Twinbrook 2-1525

Shakeout Tool

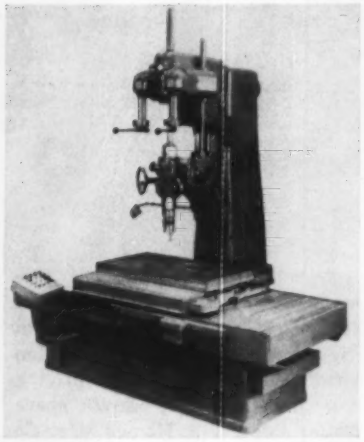
Sand removal from small castings is speeded by this tool for pattern and model shop, brass and small job lot foundries.

An air-operated reciprocating

peen is mounted to a C-section yoke. The part is placed in the yoke, and the peening advances until it comes in firm contact with the part; a reciprocating peening stroke takes place which quickly dislodges all sand from the casting. *Write:* Keller Tool Division, Gardner-Denver, Grand Haven, Mich. *Phone:* 551

Jig Borer

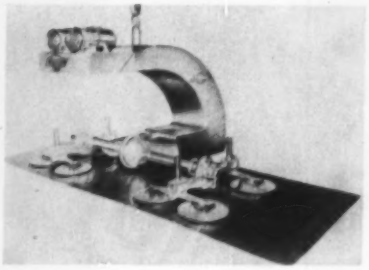
Work positioning is automatic; there is no manual handling of the table and slides.



The structural design gives 100 per cent support to heavy work throughout the range of the machine. Spindle nose tooling speeds operation and a newly developed control arrangement increases operating efficiency. *Write:* Cleereman Machine Tool Co., Green Bay, Wis. *Phone:* Hemlock 7-2508

Vacuum Sheet Lifter

This eight-cup, roll-over unit has a lifting capacity of about 14,000 lb. It handles sheets of any nonporous material up to 5 ft wide and 20 ft long. Up to 2000 lb can



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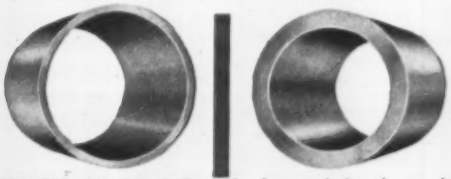

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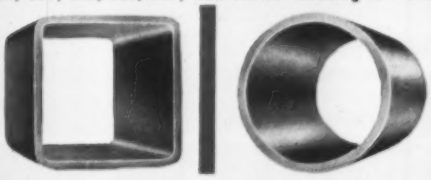

PIPE SIZES: ⅛" to 4" IPS Schedules 5 & 10

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be handled with a 7 to 1 safety ratio.

Lifting of the sheets is done by a vacuum produced by two pumps. The lifter can rotate the sheet 180 degrees or hold it at any angle. It is equipped with a U-hook for attaching to an overhead crane. *Write*: F. J. Littell Machine Co., 4103 Ravenswood Ave., Chicago 40, Ill. *Phone*: Eastgate 7-5000

Hookup Device

It can move a freight car, yet it weighs less than 9 lb. Other uses: Moving motors and machinery, opening freight car doors and stretching and holding tension supports.

Critical parts are made of Tenzaloy, a high yield strength, high tensile strength aluminum alloy.

The unit is rated at 3000 lb when double reeved. Its cable allows 5½-ft of pull or lift (double strand) and 14 ft (single strand). A reversible pawl wheel permits automatic lowering. *Write*: Wright Hoist Div., American Chain & Cable Co. Inc., York, Pa. *Phone*: 5431

Sand Preparation

This screening and magnetic separation unit has a capacity of 78 tons an hour. No pits are required for installation; loading height is 50 in. Hopper capacity is 65 cu ft. Where headroom is available, this may be increased.

Separate dustproof motors are provided for the belt drive and the screen drive. An electromagnet provides complete scrap removal. *Write*: Beardsley & Piper, Division Pettibone Mulliken Corp., 2424 N. Cicero Ave., Chicago 39, Ill. *Phone*: Berkshire 7-3700

Tractor Shovel

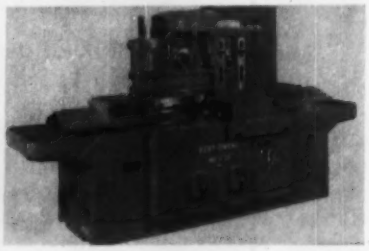
This 15-cu-ft unit, for handling bulk materials, has power-shift transmission, torque converter, planetary wheel axle and low-level bucket action.

The bucket will handle 1500 lb while traveling at 5.6 mph. Top speed is 11.2 mph, reverse is 10.25 mph.

The model comes with either a 36-hp gasoline engine or a 42-hp diesel engine. The rubber-tired machine has a ground clearance of 7½-in. *Write*: Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. *Phone*: Walnut 5-8881

Milling Machine

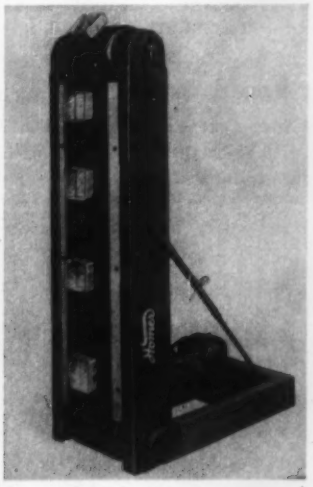
Designed for rapid milling operations on large size work, this machine has a speed range of 20 to 1050 rpm. Either a 7½ or 10-hp motor powers the spindle.



The 16 x 64-in. table, beefed with heavy rib sections, bears on hardened steel ways. Lubrication of the table ways, spindle bearings and drive gears is automatic. The table has a rapid traverse rate of 300 ipm; feeds range from ½ to 60 ipm. *Write*: Kent-Owens Machine Co., Toledo, O. *Phone*: Garfield 8331

Magnetic Conveyors

They move ferrous parts up inclines as steep as 90 degrees. Feed point can be at any desired height on the conveyor. In automated

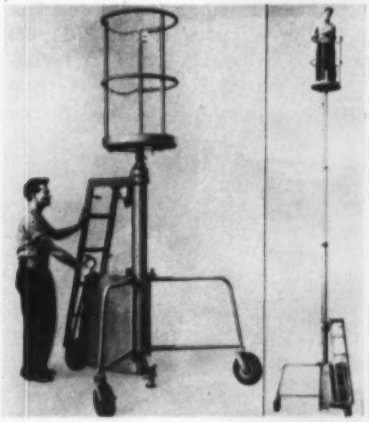


production lines, these units stack flat pieces, feed machines and do other handling operations. They permit close grouping of production machinery to save space. *Write*: Dept. 149, Homer Mfg. Co. Inc., Lima, O.

Bulb Snatcher

This mobile, compact hydraulic lift goes up to 20 ft for painting, plastering, repairing and changing light bulbs. Four-hundred lb can be lifted.

The unit has a rigid frame supported by three 12-in. wheels; the front wheel is attached to a tow

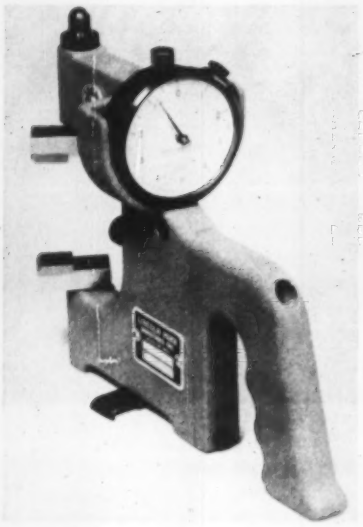


NEW PRODUCTS and equipment

bar for easy steering. Foot brakes are supplied to prevent movement when in use. *Write:* G. W. Galloway Co., 25 N. Fourth Ave., Arcadia, Calif.

Dial Snap Gages

They give direct readings from the measuring anvil to the indicator. There are no bearings, levers, shafts or cams to wear or get out of adjustment.

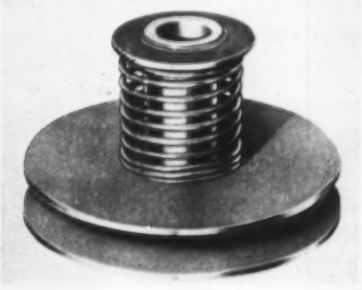


Parallel anvils are tipped with solid cemented carbide. Ten standard models go up to 2.500 in. *Write:* Lincoln Park Industries Inc., 1719 Ferris Ave., Lincoln Park 25, Mich. *Phone:* Dunkirk 1-0550

Variable Speed Pulley

Here is a ¾-hp pulley that can be adapted to new or old equipment. No lubrication is needed; oil impregnated bronze bearings are used.

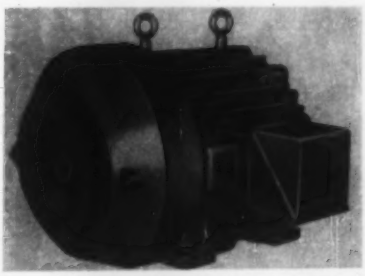
Speed ratio is 2¾:1. An A-section belt is used. The shaft bore runs through the length of the pulley allowing reverse mounting.



The 6¼-lb unit is 4 13/16-in. long and 6 in. in diameter. *Write:* Lovejoy Flexible Coupling Co., 4871 W. Lake St., Chicago 44, Ill. *Phone:* Estebrook 9-3010

Enclosed Motors

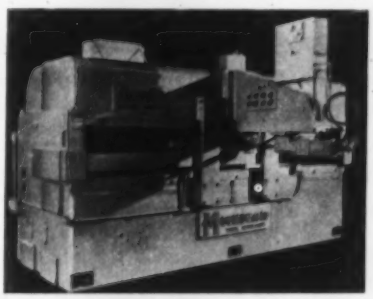
A rerated line of fan-cooled motors (up to 100 hp) features rib-type, cast iron frame construction for easy cleaning. Plastics and plastic coated wire are used in the stator windings.



A ventilating fan provides the same efficiency of cooling when operated in either direction. *Write:* Century Electric Co., 1806 Pine St., St. Louis, Mo. *Phone:* Central 1-4920

Spline Roller

This machine cold forms splines and other shapes up to 2 in. in diameter. It forms toothed and grooved shapes on shafts by rolling the piece between two parallel-acting racks.



The overarm or tailstock is adjustable for parts from 12 to 36 in. long. A 25-hp motor powers the machine.

Space requirements are 105 x 135 in. Height is 80¼-in. *Write:* Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich. *Phone:* Twinbrook 1-3111

NEW literature

Write directly to the company for a copy

Sling Chain Catalog

Specifications, illustrations and working load limits for three grades of slings are given on each page—catalog S-555, 15 pages. Campbell Chain Co., York, Pa.

Fire Fighting

Here is information on Foamite Airfoam fire extinguishing equipment for combating liquid fires—36 pages. American LaFrance Corp., Elmira, N. Y.

Centrifugal Pumps

Self-priming electric powered pumps are specified—4 pages. Rice Pump & Machine Co., Belgium, Wis.

Metal Finishing

Chemical products, cleaners, stripping compounds and protective compounds are described in a pocket-size folder—24 pages. Ethone Inc., 442 Elm St., New Haven 11, Conn.

Cable Vulcanizers

Information on repairing cable up to 2 in. in diameter is given—bulletin B48a, 16 pages. Dept. C-49, Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa.

Gear Tester

Instrument for rapid production checking of helical, spur and worm gears is covered—bulletin 5503, 4 pages. Arch Instrument Co. Inc., 101 Holmes St., North Quincy, Mass.

Oil-Hydraulic Pumps

Catalog covers engineering, design and application information of pumps, pressure controls, volume controls, directional controls, control assemblies, hydraulic motors, transmissions, cylinders and hydraulic accessories—catalog 5001A, 56 pages. Vickers Inc., Division of Sperry Rand Corp., 1400 Oakman Blvd., Detroit 32, Mich.

18-in. Drills

Features of bench, floor and multi-spindle models are covered—catalog D-136, 8 pages. Their installation, operation, maintenance and parts list are given—catalog D-137, 24 pages. Cincinnati Lathe & Tool Co., Cincinnati, O.

Materials Handling

Applications of materials handling trucks are shown in case studies—25 folders. Dept. R-24, Lewis-Shepard Products Inc., Watertown, Mass.

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Alloy Metal Division
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Market Outlook

STEEL PRODUCTION rose for the first time in four weeks. The outlook is for the best operations since June.

Steelworkers' vacations are about over, chances for seasonable weather are improving and good progress is being made in repairing equipment that went through vigorous second-quarter usage.

STEP-UP—Upturn in the week ended Aug. 21 was 1 point, making the national ingot production rate 91 per cent of capacity.

After registering 97 per cent at the end of June, the rate toppled to the low 70s during the steelworkers' wage negotiations. It takes time to recover from such a slump—and the recovery was slowed by summer vacations, extremely hot weather which affected both equipment and men and equipment repairs. July's output averaged 85.4 per cent of capacity.

RUNNING BEHIND—Order backlogs and new demand are big enough to support a production rate as high as producers can attain. The 91-per-cent rate is less than indicative of orders on the books and current demand. It's merely the highest that producers can get their production up to.

Helping increase the rate is the resumption of steelmaking in the Birmingham area where railroad men ended a strike that had tied up production. Output there rose to 60 per cent of capacity, a jump of 37 points over the preceding week.

NO LET-UP—Although some consumers are building steel inventories, they are not inclined to reduce their rate of ordering. The automobile industry continues to take all the steel it has on order. Its model change-over will be made quickly this year, so it wants to have sufficient steel ready for early use.

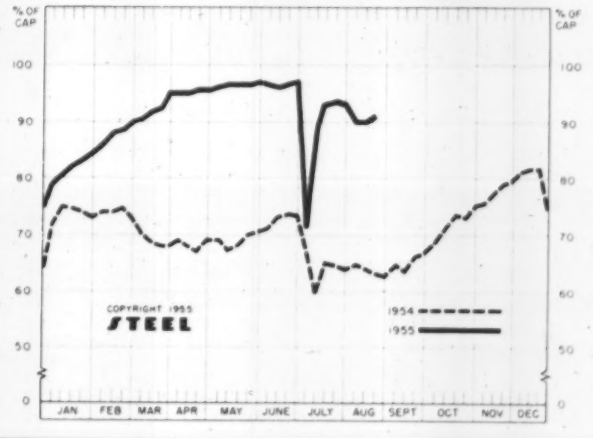
The auto industry is a big reason why steel is in strong demand. This year it increased its rate of take by 26 per cent. In the first half of 1955, automakers received 23.9 per cent of mill shipments of finished steel, compared with 18.9 per cent in the corresponding period of last year.

SURPRISE—Even though the construction industry (including maintenance) has been running pell-mell this year, it is not taking so great a portion of the mills' output as it did last year. It took 11.4 per cent of mill shipments of finished steel in the first half of this year, compared with 14.2 per cent in all of last year.

MORE PUSH—As the summer has progressed, the construction industry has strengthened its demand for steel—largely structurals and plates. Demand for these products is being accentuated by two consumers which just got back into the market—railroads and shipbuilders.

PRICE TRENDS—The scrap price climb that started in June and carried the market up $9 has halted. STEEL's price composite on steelmaking scrap edged down to $43.83 a gross ton from the preceding week's $44.17. Unchanged is STEEL's price composite on finished steel at $127.41 a net ton. The prices of primary magnesium pig and ingot have gone the way of steel and aluminum. Magnesium and copper rose 4 cents a pound. This is the second rise for magnesium this year, the third for copper.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Aug. 21	Change	Same Week 1954	Same Week 1953
Pittsburgh	97	+ 2*	61	95.5
Chicago	95.5	+ 0.5*	65	100.5
Mid-Atlantic	93.5	— 0.5	59	96
Youngstown	100	0	64	106
Wheeling	97	— 0.5	78	92
Cleveland	100.5	+ 3*	57	102
Buffalo	105	0	56	106.5
Birmingham	60	+ 37	62	94
New England	87	+ 1	52	90
Cincinnati	94.5	+ 6.5	51.5	91.5
St. Louis	96	— 2	51.5	103
Detroit	87.5	— 1	57	109
Western	101	— 2	82	102.5
National Rate	91	+ 1	63	96

INGOT PRODUCTION‡

	Week Ended Aug. 21	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	138.7†	134.3	136.6	91.8
NET TONS (In thousands)	2,228†	2,157	2,195	1,474

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Metalworking Outlook—p. 29
Technical Outlook—p. 67

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Aug. 16 1955	Aug. 9 1955	Month Ago	July Average
(1947-1949=100)	153.9	153.9	153.9	153.8

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Aug. 16

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.800	Sheets, Electrical	$10.200
Rails, Light, 40 lb	6.217	Strip, C.R., Carbon	7.993
Tie Plates	5.625	Strip, C.R., Stainless, 430 (lb)	0.444
Axles, Railway	8.000	Strip, H.R., Carbon	5.350
Wheels, Freight Car, 33 in. (per wheel)	52.50	Pipe, Black, Buttweld (100 ft)	16.366
Plates, Carbon	4.950	Pipe, Galv., Buttweld (100 ft)	19.971
Structural Shapes	4.867	Pipe, Line (100 ft)	158.925
Bars, Tool Steel, Carbon (lb)	0.460	Casing, Oil Well, Carbon (100 ft)	165.120
Bars, Tool Steel Alloy, Oil Hardening Die (lb)	0.560	Casing, Oil Well, Alloy (100 ft)	244.670
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.80 (lb)	1.185	Tubes, Boiler (100 ft)	39.470
Bars, Tool Steel, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.680	Tubing, Mechanical, Carbon	20.980
Bars, H.R., Alloy	9.375	Tubing, Mechanical Stainless, 304 (100 ft)	180.952
Bars, H.R., Stainless, 303 (lb)	0.450	Tin Plate, Hot-dipped, 1.25 lb	8.533
Bars, H.R., Carbon	5.350	Tin Plate, Electrolytic, 0.25 lb	7.233
Bars, Reinforcing	5.313	Black Plate, Canmaking Quality	6.333
Bars, C.F., Carbon	8.660	Wire, Drawn, Carbon	8.575
Bars, C.F., Alloy	12.175	Wire, Drawn, Stainless, 430 (lb)	0.578
Bars, C.F., Stainless, 302 (lb)	0.468	Bale Ties (bundle)	6.473
Sheets, H.R., Carbon	5.145	Nails, Wire, 8d Common	8.618
Sheets, C.R., Carbon	6.239	Wire, Barbed (80-rod spool)	7.847
Sheets, Galvanized	7.690	Woven Wire Fence (20-rod roll)	18.635
Sheets, C.R., Stainless, 302 (lb)	0.588		

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 17 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	207.63	207.63	207.63	194.19	156.99
Index in cents per lb	5.625	5.625	5.625	5.261	4.253

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$127.41	$127.41	$127.41	$117.77	$94.50
No. 2 Fdry. Pig Iron, GT.	58.99	58.99	58.99	56.54	46.85
Basic Pig Iron, GT	58.49	58.49	58.49	56.04	45.97
Malleable Pig Iron, GT.	59.77	59.77	59.77	57.27	47.49
Steelmaking Scrap, GT	44.17	44.17	40.17	29.00	40.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Aug. 17 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.65	4.65	4.65	4.30	3.45
Bars, H.R., Chicago	4.65	4.65	4.65	4.30	3.45
Bars, H.R., deld. Philadelphia	4.90	4.90	4.90	4.55	3.93
Bars, C.F., Pittsburgh	5.90	5.90	5.90	5.40	4.10-4.15
Shapes Std., Pittsburgh	4.60	4.60	4.60	4.25	3.40
Shapes, Std., Chicago	4.60	4.60	4.60	4.25	3.40
Shapes, deld., Philadelphia	4.88	4.88	4.88	4.53	3.46
Plates, Pittsburgh	4.50	4.50	4.50	4.225	3.50
Plates, Chicago	4.50	4.50	4.50	4.225	3.50
Plates, Coatesville, Pa.	4.50	4.50	4.50	4.225	3.90
Plates, Sparrows Point, Md.	4.50	4.50	4.50	4.225	3.50
Plates, Claymont, Del.	4.50	4.50	4.50	4.225	3.60
Sheets, H.R., Pittsburgh	4.325	4.325	4.325	4.05	3.35
Sheets, H.R., Chicago	4.325	4.325	4.325	4.05	3.35
Sheets, C.R., Pittsburgh	5.325	5.325	5.325	4.95	4.10
Sheets, C.R., Chicago	5.325	5.325	5.325	4.95	4.10
Sheets, C.R., Detroit	5.325-5.425	5.325-5.425	5.325-5.425	5.10	4.30
Sheets, Galv., Pittsburgh	5.85	5.85	5.85	5.45	4.40
Strip, H.R., Pittsburgh	4.325	4.325	4.325	4.05	3.50
Strip, H.R., Chicago	4.325	4.325	4.325	4.05	3.25
Strip, C.R., Pittsburgh	6.317	6.317	6.317	5.75	4.15-4.50
Strip, C.R., Chicago	6.35-6.45	6.35-6.45	6.35-6.45	6.00	4.30
Strip, C.R., Detroit	6.35	6.35	6.35	5.60-5.90	4.35-4.95
Wire, Basic, Pittsburgh	6.25	6.25	6.25	5.75	4.50
Nails, Wire, Pittsburgh	7.60	7.60	7.60	6.85	5.30
Tin plate (1.50 lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$7.50
SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$84.50	$84.50	$84.50	$78.00	$63.00
Wire rods, 7/32-9/16" Pitts.	5.025	5.025	5.025	4.675	3.85
PIG IRON, Gross Ton					
Bessemer, Pitts.	$59.50	$59.50	$59.50	$57.00	$48.50
Basic, Valley	58.50	58.50	58.50	56.00	46.00
Basic, deld. Phila.	56.16	56.16	56.16	49.66	50.39
No. 2 Fdry, Pitts.	59.00	59.00	59.00	56.50	49.50
No. 2 Fdry, Chicago	59.00	59.00	59.00	56.50	46.50
No. 2 Fdry, Valley	59.00	59.00	59.00	56.50	46.50
No. 2 Fdry, deld. Phila.	59.66	59.66	59.66	50.16	50.89
No. 2 Fdry, Birm.	55.00	55.00	55.00	52.88	42.38
No. 2 Fdry (Birm.) deld. Cin.	62.70	62.70	62.70	60.43	49.08
Malleable, Valley	59.00	59.00	59.00	56.50	46.50
Malleable, Chicago	59.00	59.00	59.00	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	19.00†	200.00†	175.00*

75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.50	$44.50	$39.50	$29.50	$46.00
No. 1 Heavy Melt, E. Pa.	46.00	46.00	42.00	27.50	37.50
No. 1 Heavy Melt, Chicago	42.00	42.00	39.00	30.00	38.50
No. 1 Heavy Melt, Valley	46.50	46.50	40.50	30.50	46.25
No. 1 Heavy Melt, Cleve.	44.00	44.00	38.50	28.50	43.25
No. 1 Heavy Melt, Buffalo	39.50	39.50	34.50	26.50	39.75
Rails, Rerolling, Chicago	64.50	64.50	59.00	44.50	56.50
No. 1 Cast, Chicago	46.50	45.50	45.50	35.50	49.00
COKE, Net Ton					
Beehive, Furn. Connlsvl.	$13.625	$13.625	$13.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.50	16.50	16.75	16.75	15.50
Oven, Fdry, Chicago	25.75	25.75	24.50	24.50	21.00

Daily Nonferrous Price Record

	Price Aug. 17	Last Change	Previous Price	July Avg.	June Avg.	Aug. 1954 Avg.
Copper	36.00-40.00	Aug. 17, 1955	36.00	36.000	36.000	30.000
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	13.846
Zinc	12.50	June 16, 1955	12.00	12.250	12.250	11.000
Tin	96.875	Aug. 17, 1955	96.625	97.045	93.668	93.332
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	24.40	Aug. 1, 1955	23.20	23.200	23.200	22.119
Magnesium	32.50	Aug. 16, 1955	28.50	28.500	28.500	27.000

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

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60,000 pound, 75 inch wide—
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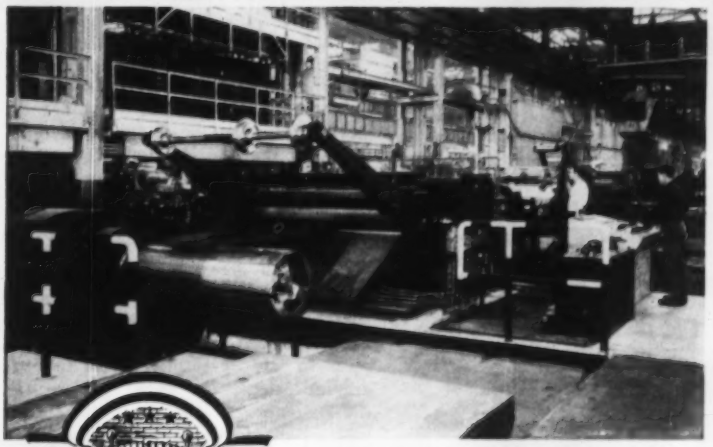

Photos show Stamco slitting and coiling unit in cold strip mill

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STAMCO, Inc., New Bremen, Ohio

Nonferrous Metals

Most of copper's labor problems are out of the way, but the shortage still will be with us in 1956. Price of domestic metal jumps to 40 cents

Nonferrous Metal Prices, Pages 96 & 97

COPPER is going to be in short supply and long demand for some time. You might as well adjust to that situation if you already haven't. Most of the labor problems have been settled, but you can't replace 80,000 to 90,000 tons of lost production overnight.

Early last week, the scene was set for full production when Kennecott Copper Corp. and the International Mine, Mill & Smelter Workers agreed to terms for the copper company's Utah properties. Then the United Steelworkers got into the act at the firm's Ray Division in Arizona by petitioning for the right to represent some of its workers. The mine, mill and smelter union has been the bargaining agent.

To The Rescue—Because the company and workers can't sign any contract until a National Labor Relations Board election is held in October to settle the jurisdictional dispute, it looked like the settlement was for naught. The rest of the workers wouldn't go back to work until the Ray Division started. Kennecott assured both unions that as soon as one of them has been certified as bargaining agent, terms similar to the general agreement would be granted. On that basis, the workers tentatively agreed to return to work.

That means that copper should be flowing in the supply lines before the end of the month. It will be a trickle at first, mostly from the few facilities that were not directly involved in the strike. They were able to keep heat up even though there was no raw material to refine. It won't take them as long to get started again as it will the bulk of the facilities. But production will not return to normal—prestrike levels—until well into September.

Fast Write-Off—Lost copper production is a lot like sleep: If you lose a night's rest, you can't make it up. The industry might as well write off the 80,000 to 90,000 tons lost in the last six weeks. Before the strike started, demand was taking everything that capacity production could offer. Now demand certainly will be many times greater, what with current production schedules to fill and depleted pipe lines to replenish. About the only course open to producers is to add more shifts, but that will not turn out much more red metal.

Nor can the industry expect much from the government in the way of relief. It's well known that strategic stockpile metal can be released only by the President in case of national emergency. While this may seem like one to the industry, it is doubtful that it qualifies under the law. There is a small amount of metal left in Defense Production Act inventory, but it is being doled out to defense contractors that can't get metal at any price.

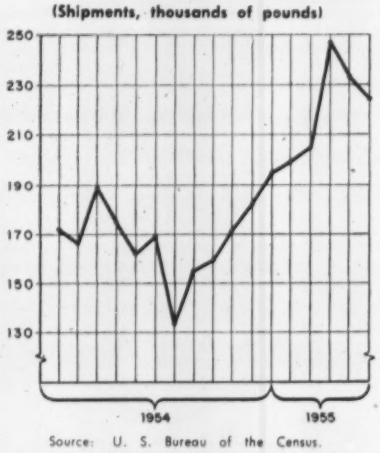
How Long?—"The copper and brass industry faces a serious shortage of copper for sometime to come," says Herman W. Steinkraus, president, Bridgeport Brass Co. Most estimates put the shortage into 1956. If the situation eases by March, producers will find themselves faced with commitments to replace borrowed copper in the government stockpile. Tightness probably will continue into the second quarter at the least.

One spokesman for a major producer says there is no reason why there shouldn't be steady production for the foreseeable future now that domesic problems are settled. Foreign production hinges on the always-explosive Rhodesian copper belt. Several walkouts this summer indicate that a full strike could develop at any time. But Chilean production should keep up—in effect, a major strike there would be against the government. That isn't likely.

Record Level—Pricewise, last week domestic copper jumped to 40 cents a pound, a 4-cent increase.

On the open market, the 40-cent level was reached and passed in the latter stages of the strike as hard-pressed businessmen decided that price was less important than supplying customers with products. Some observers believe the situation is getting out of hand, though. Herbert Barchoff, president of the Copper & Brass Warehouse Association, predicted: "The traditional upsurge in fall business for Christmas will make a gray market of Korean War proportions inevitable and could bring government controls into the industry once again."

Nonferrous Castings: Looks Like a Record Year



Source: U. S. Bureau of the Census.

Aluminum: Another Record Shot

Aluminum production is sailing along comparatively trouble-free. Figures of the Aluminum Association show that July production set a new level to shoot at in August. Output of 265,337,163 lb last month brought the year's total for seven months to 1,785,070,173 lb, about 6 or 7 per cent ahead of last year. With labor negotiations past and prices adjusted, about the only worry of the industry is to get enough metal to satisfy demand.

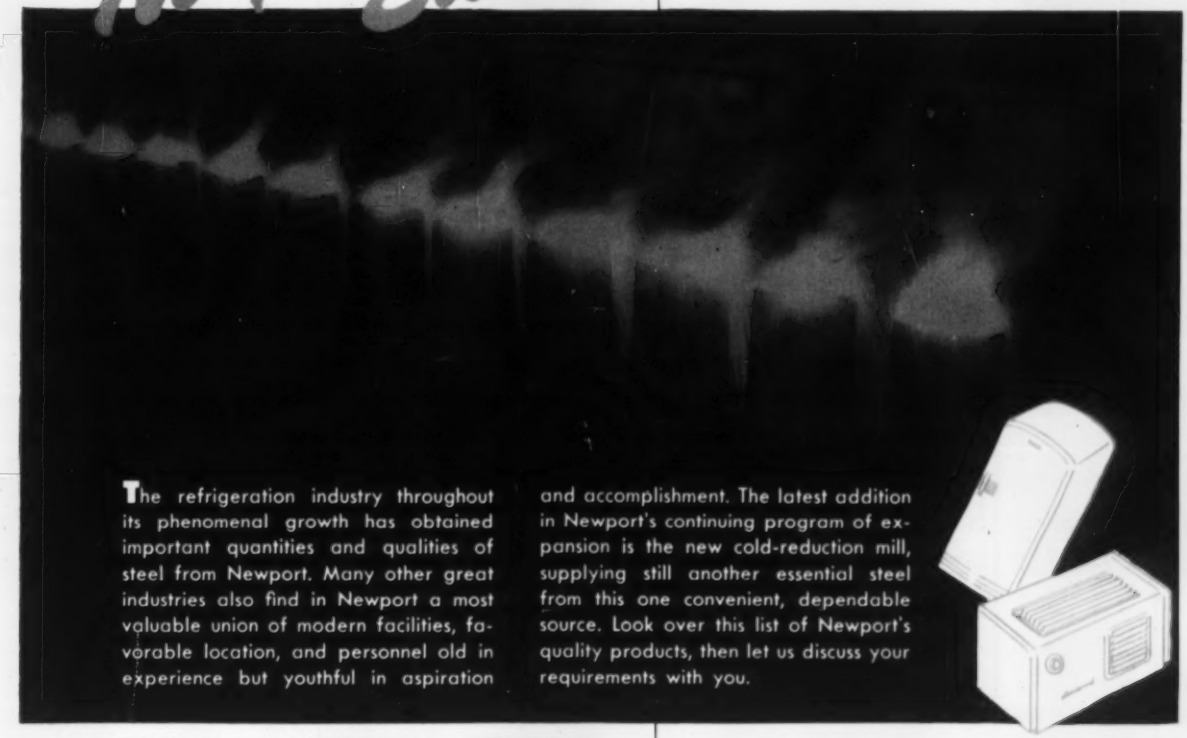
But that problem hit a stumbling block when the government suspended issuance of certificates of necessity for 38 types of facilities, including aluminum production. This does not kill all proposed expansion, but it probably will take out the smaller projects if the suspension is upheld. Government agencies are studying the facilities to determine what defense value they will have.

Meanwhile, Aluminum Co. of America announced plans to install 11 foil mills to add 32 million lb of foil to annual production. Eight will be in the Davenport, Iowa, plant and three will go in at Alcoa, Tenn. The project will cost about $19 million and will be ready for operation after the completion of Alcoa's new smelting facilities in Texas.

Reynolds Metals Co., which completed installation of a 78-in. wide aluminum foil mill at Richmond, Va., says its customers' requirements are expanding so much it will have to increase foil facilities by 40 million lb annually.

Newport Steel

FOR THE REFRIGERATION INDUSTRY



The refrigeration industry throughout its phenomenal growth has obtained important quantities and qualities of steel from Newport. Many other great industries also find in Newport a most valuable union of modern facilities, favorable location, and personnel old in experience but youthful in aspiration and accomplishment. The latest addition in Newport's continuing program of expansion is the new cold-reduction mill, supplying still another essential steel from this one convenient, dependable source. Look over this list of Newport's quality products, then let us discuss your requirements with you.

ECONOMICAL WATERAIL-TRUCK DELIVERY

Newport Steel is ideally situated on the Mississippi-Ohio River system and the great Cincinnati rail-truck hub. New barge facilities, 7 major railroads and 143 motor carriers enable Newport to give economical, dependable delivery to the entire area of the Middle West and South.

PRODUCTS OF NEWPORT STEEL

Cold-Rolled Sheets
Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Hot-Rolled Sheets
Hot-Rolled Pickled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Electrical Sheets
Alloy Sheets and Plates
Electric Weld Line Pipe
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

Newport Steel

CORPORATION

NEWPORT, KENTUCKY

YOUR CONFIDENCE IS JUSTIFIED WHERE THIS FLAG FLIES

A SUBSIDIARY OF MERRITT-CHAPMAN & SCOTT CORPORATION

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 24.40, pigs 22.50. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 26.2; No. 43, 5% Si, 26.00; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 27.80; No. 195, 4.5% Cu, 0.8% Si, 27.20; No. 214, 3.8% Mg, 27.7; No. 356, 7% Si, 0.3% Mg, 26.1.

Antimony: R.M.M. brand, 99.5%, 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 36.00-40.00 deld. Conn. Valley; 36.00-40.00 deld. Midwest; Lake, 36.00 deld; Fire refined, 35.75 deld.

Germanium: 99.9% $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$100 nom, per troy oz.

Lead: Common, 14.80, chemical, 14.90, corroding, 14.90, St. Louis. New York basis, add 0.20.

Lithium: 99% +, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig, 28.50; notched ingot, 29.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingots; for Los Angeles, add 2.50 for both pig and ingot. Sticks 1.3 in. diameter, 49.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R, 34.00; alloy M, 36.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $253-$255 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced, $3-$3.25 per lb; pressed ingot, $4.06 per lb; sintered ingot, $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 64.50; 10-lb pigs, unpacked, 67.65; "XX" nickel shot, 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $22-$24 per troy oz.

Platinum: $80-$85 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $50-$55 per troy oz.

Selenium: 99.5%, $6-$7.25 per lb.

Silver: Open market, 90.75 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot, 96.875; prompt, 96.75.

Titanium: Sponge, 99.3 + %, grade A-1 ductile (0.3% Fe max), $3.95, grade A-2 (0.5% Fe max), $3.50 per pound.

Tungsten: Powder, 98.8%, carbon, reduced, 1000-lb lots, $4.35-$4.40 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99 + % hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 12.50; brass special, 12.75; intermediate, 13.00, E. St. Louis, freight allowed over 0.50 per pound. High grade, 13.85; special high grade, 14.00, deld. Diecasting alloy ingot No. 3, 16.50; Nos. 2 and 5, 17.00, deld.

Zirconium: Ingots, commercial grade, 14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $10 per lb. Powder electronics grade, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 31.25-33.00; No. 12 foundry alloy (No. 2 grade), 30.00-30.75; 5% silicon alloy, 0.60 Cu max, 31.00-32.25; 13 alloy, 0.60 Cu max, 31.50-32.25; 195 alloy, 31.25-32.75; 108 alloy, 30.00-30.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 30.75; grade 2, 29.75; grade 3, 28.75; grade 4, 28.25.

Brass Ingot: Red brass, No. 115, 39.75; tin bronze No. 225, 52.50; No. 245, 45.75; high-leaded tin bronze No. 305, 43.00; No. 1 yellow No. 405, 32.75; manganese bronze No. 421, 36.25.

Magnesium Alloy Ingot: AZ63A, 32.00; AZ91B, 32.00; AZ91C, 32.00; AZ92A, 32.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.74; rod, bar, wire, $1.71.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 41.35; 30,000-lb lots, 41.48; l.c.l., 41.98. Weatherproof, 100,000-lb, 40.78; 30,000 lb, 41.03; l.c.l., 41.53. Magnet wire deld., 15,000 lb or more, 48.15; l.c.l., 48.90.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more, $20 per cwt; pipe, full coils, $20 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.00-20.50; plates, 19.00-22.25.

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	67.9	66.4	...	...
0.156-0.172	57.5	55.9	...	...
0.188	57.5	55.9	...	71.7
0.219-0.234	54.5	52.9	...	...
0.250-0.281	54.5	52.9	...	68.4
0.313	54.5	52.9	...	65.2
Cold-finished				
0.375-0.547	53.4	51.4	63.7	61.3
0.563-0.688	53.4	51.4	60.6	57.5
0.750-1.000	52.1	50.1	55.4	54.2
1.063	52.1	50.1	...	52.3
1.125-1.500	50.1	48.2	53.6	52.3
Rolled				
1.563	48.8	46.9	...	...
1.625-2.000	48.2	46.2	...	51.9
2.125-2.500	47.0	45.0	...	...
2.563-3.375	45.6	43.6	...	...

ALUMINUM

Sheets and Circles: 110 and 3003 mill finish (30,000 lb base; freight allowed)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	37.5	42.3	...	...
0.135-0.096	38.0	43.2	...	...
0.095-0.077	38.7	44.2	36.1	41.3
0.076-0.061	39.3	45.1	36.3	41.5
0.060-0.048	39.9	45.6	36.7	42.0
0.047-0.038	40.4	46.5	37.2	42.4
0.037-0.030	40.8	47.0	37.6	43.1
0.029-0.024	41.4	47.5	37.9	43.6
0.023-0.019	42.2	49.0	38.8	44.5
0.018-0.017	43.0	...	39.4	45.4
0.016-0.015	43.9	...	40.2	46.6
0.014	44.9	...	41.2	47.9
0.013-0.012	46.1	...	41.9	48.9
0.011	47.1	...	43.1	50.5
0.010-0.0095	48.4	...	44.3	52.2
0.009-0.0085	49.7	...	45.8	54.3
0.008-0.0075	51.3	...	47.0	56.1
0.007	52.8	...	48.5	58.4
0.006	54.4	...	49.9	63.4

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam, 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	36.5	40.8
5050-F	37.6	41.9
3004-F	38.6	43.8
5052-F	39.9	45.2
6061-T6	41.1	46.0
2024-T4*	43.6	49.9
7075-T6*	51.4	58.5

*24-48 in. widths or diam, 72-180 in. lengths.

ALUMINUM

Forging Stock: Round, Class 1, 39.10-50.10, in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 43.00-56.20 in random lengths, 0.375-4 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20-ft lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
⅜	$16.85	2	$ 51.95
1	26.50	4	143.00
1¼	35.85	6	256.70
1½	42.90	8	386.30

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in., 72.20; 1 x 4 in., 67.00. Rod, 1 in., 69.00; lb and over, f.o.b. mill.

Plate: Hot-rolled AZ31, 59.00, 30,000 lb or more, 0.250 in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 62.00, 30,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in., 72.20; 1 x 4 in., 67.00. Rod, 1 in., 69.00; 2 in., 66.50. Tubing, 1 in. OD x 0.065 in., 90.00. Angles, 1 x 1 x ⅛-in., 75.90; 2 x 2 x ⅛-in., 70.00. Channels, 5 in., 70.90. I-beams, 5 in., 70.20.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 17.50-18.00; old sheets, 14.50-16.00; borings and turnings, 10.50-11.00; crankcases, 14.50-16.00; industrial

BRASS MILL PRICES

	MILL PRODUCTS a			SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	54.76-58.76b	52.36-56.36c	.....	54.82-58.82	32.000	32.000	31.250
Yellow Brass	46.27-49.27	37.22-40.05d	46.81-49.81	49.18-52.18	23.875	23.625	22.000
Red Brass, 85%	50.99-54.54	50.93-54.48	51.53-55.08	53.80-57.35	28.125	27.875	27.375
Low Brass, 80%	49.75-53.15	49.69-53.09	50.29-53.69	52.56-55.96	27.000	26.750	26.750
Naval Brass	49.99-52.83	44.30-47.14	57.05	53.15-55.99	22.125	21.875	21.375
Com. Bronze, 90%	52.78-56.48	52.72-56.42	53.32-57.02	55.34-59.04	29.250	29.000	28.500
Nickel Silver, 10%	60.20-63.05	62.53g	62.53	.....	27.625	27.375	13.813
Phos. Bronze, A, 5%	73.03-77.14	73.53-77.64	73.53	74.71	32.250	32.000	31.000
Silicon Bronze	62.66-62.82	61.85-62.01	62.70-62.86	64.73e	35.000	34.750	34.000
Manganese Bronze	53.73-56.57	47.80-50.67	58.24	.....	22.125	21.875	21.375
Muntz Metal	48.14-50.94	43.95-46.75	.....	.....	22.375	22.125	21.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. Prices indicate the lowest side of the range. g. Leaded.

Copper and Brass: No. 1 heavy copper and wire, 35.00-35.50; No. 2 heavy copper and wire, 34.00-34.50; light copper, 32.00-32.50; No. 1 composition red brass, 28.00-28.50; No. 1 composition turnings, 26.50-27.50; yellow brass turnings, 17.50-18.00; new brass clippings, 22.00-23.00; light brass, 17.50-18.00; heavy yellow brass, 20.50-21.00; new brass rod ends, 20.50-21.00; auto radiators, unsweated, 22.00-22.50; cocks and faucets, 22.50-23.00; brass pipe, 23.50-24.00.

Lead: Heavy, 11.50-12.00; battery plates, 6.50-6.75; linotype and stereotype, 14.00-14.25; electrotype, 12.00-12.50; mixed babbitt, 14.50.

Magnesium: Clippings, 18.50-19.50; clean castings, 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings, 38.50-42.00; old sheets, 34.00-36.00; turnings, 29.50; rods, 38.50-42.00.

Nickel: Sheets and clips, 80.00-90.00; rolled anodes, 80.00-90.00; turnings, 65.00-75.00; rod ends, 80.00-90.00.

Zinc: Old zinc, 5.00-5.50; new die-cast scrap, 5.00-5.50; old die-cast scrap, 3.50-3.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 22.00; 3003 clippings, 21.00-21.75; 6151 clippings, 20.50-21.50; 5052 clippings, 20.50-21.50; 2014 clippings, 20.00-21.00; 2017 clippings, 20.00-21.00; 2024 clippings, 20.00-21.00; mixed clippings, 20.00-21.50; old sheet, 18.00-19.00; old cast 18.50-19.00; clean old cable (free of steel), 21.50-22.00; borings and turnings, 18.50-19.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 54.00; light scrap, 49.00; turnings and borings, 39.00.

Copper and Brass: No. 1 copper, 38.00; No. 2 copper, 36.50; light copper, 34.50-34.75; refinery brass (60% copper) per dry copper content, 33.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 copper, 39.50; No. 2 copper, 38.00; light copper, 36.00; No. 1 composition borings, 30.50-31.00; No. 1 composition solids, 31.00-31.50; heavy yellow brass solids, 22.00-23.50; yellow brass turnings, 21.50-22.00; radiators, 24.50-25.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 51.42-55.42, oval, 50.92-54.92, 5000-10,000 lb; electrodeposited, 45.78, 2000-5000 lb lots; cast, 52.54, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, $1.015; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb, $1.155 200-499 lb, $1.14, 500-999 lb, $1.135; 1000 lb or more, $1.13.

Zinc: Bar, 21.00; bar or flat top, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100-lb drums.

Chromic Acid: Less than 10,000 lb, 28.50; over 10,000 lb, 27.50.

Copper Cyanide: 100 lb, 76.80; 200 lb, 76.05; 300 lb, 75.80; 400-900 lb, 75.05; 1000 lb and over, 73.05; effective Mar. 24, 1955.

Copper Sulphate: Crystal, 100 lb, 21.50; 200 lb, 18.50; 300 lb, 17.50; 400 lb, 17.00; 500-1900 lb, 15.50; 2000-10,000 lb, 15.25; 10,000 lb and up, 15.15. Powder, add 0.5 to above prices. Effective Mar. 29, 1955.

Nickel Chloride: 100 lb, 46.50; 200 lb, 44.50; 300 lb, 43.50; 400-4900 lb, 41.50; 5000-9900 lb, 39.50; 10,000 lb and over, 38.50. All prices eastern delivery, effective Jan. 1, 1955.

Nickel Sulphate: 100 lb, 38.25; 200 lb, 36.25; 300 lb, 35.25; 400-4900 lb, 33.25; 5000-35,900 lb, 31.25; 36,000 lb, 30.25. All prices eastern delivery effective Jan. 1, 1956.

Silver Cyanide: (Cents per ounce) 4-oz bottle, 83.125; 16-oz bottle, 81.875; 80-oz bottle, 79.375; 100-oz bottle, 79.375; f.o.b. St. Louis, New York and Los Angeles. Effective Apr. 6, 1955.

Sodium Cyanide: Egg, under 1000 lb, 19.80; 1000-19,900 lb, 18.80; 20,000 lb and over, 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb, 73.00; 100-600 lb, 58.6; 700-1900 lb, 56.1; 2000-9900 lb, 54.4; 10,000 lb or more, 53.2.

Stannous Chloride (Anhydrous): Less than 50 lb, $1.594; 50 lb, $1.254; 100-300 lb, $1.104; 400-900 lb, $1.08; 1000-1900 lb, $1.055; 2000-4900 lb, $1.019; 5000-19,900 lb, 95.8; 20,000 lb or more, 89.7.

Stannous Sulphate: Less than 50 lb, $1.293; 50 lb, 99.30; 100-1900 lb, 97.30; 2000 lb or more, 95.3.

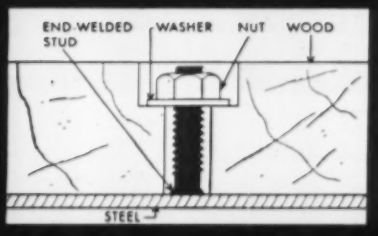
Zinc Cyanide: Under 1000 lb, 54.30; 1000 lb and over, 52.30.

"STUD" NELSON FASTENS

WOOD to STEEL IN A FLASH!

Shipyards and railroads have long been users of the NELWELD system of securing wood decking—and builders fasten wood nailers the same way.

In like manner, designers of skids, pallets, dollies and other wood-and-steel products are also benefiting by the NELWELD® method. End-welded studs are a "natural" in designing outside surfaces free from bolt heads and projections—saves drilling and tapping the steel members, too.



The pay-off is—NELSON® studs are made in many other different sizes and shapes—allowing design flexibility you never believed possible.

The aim of every Nelson Engineer is to improve fastening and reduce cost. He will arrange a demonstration in your plant or furnish a trial rental unit. Write or phone for details.

Stud Nelson

Fasten it Better at Less Cost with

NELWELD®

NELSON STUD WELDING
2715 Toledo Avenue
Lorain, Ohio

Please send more information on stud welding wood to steel, and other cost-saving applications.

NAME_____

COMPANY_____

ADDRESS_____

CITY AND STATE_____

NELSON STUD WELDING DIV. OF GREGORY INDUSTRIES, INC. LORAIN, OHIO

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. *Changes shown in italics.*
Code numbers following mill points indicate producing company. Key to page 99. Key to footnotes, page 101.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 ....$65.50

INGOTS, Alloy (NT)

Detroit R7 ....$69.00
Houston 85 ....74.00
Midland,Pa. C18 ....69.00
Munhall,Pa. U5 ....69.00

BILLETS, BLOOMS & SLABS
Carbon, rerolling (NT)

Aliquippa,Pa. J5 ....$68.50
Bessemer,Pa. U5 ....68.50
Bridgeport,Conn. N19 ..73.50
Buffalo R2 ....68.50
Clairton,Pa. U5 ....68.50
Ensley,Ala. T2 ....68.50
Fairfield,Ala. T2 ....68.50
Fontana,Calif. K1 ....76.00
Gary,Ind. U5 ....68.50
Johnstown,Pa. B2 ....68.50
Lackawanna,N.Y. B2 ..68.50
LoneStar,Tex. L6 ....70.00
Munhall,Pa. U5 ....68.50
Pittsburgh J5 ....68.50
So.Chicago,Ill. R2, U5..68.50
So.Duquesne,Pa. U5 ...68.50
Youngstown R2 ....68.50

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$84.50
Bessemer,Pa. U5 ....84.50
Bridgeport,Conn. N19 ..89.50
Buffalo R2 ....84.50
Canton,O. R2 ....86.50
Clairton,Pa. U5 ....84.50
Conshohocken,Pa. A3 ..89.50
Ensley,Ala. T2 ....84.50
Fairfield,Ala. T2 ....84.50
Fontana,Calif. K1 ....92.00
Gary,Ind. U5 ....84.50
Geneva,Utah C11 ....84.50
Houston 85 ....89.50
Johnstown,Pa. B2 ....84.50
Lackawanna,N.Y. B2 ..84.50
LosAngeles B3 ....94.00
Midland,Pa. C18 ....84.50
Munhall,Pa. U5 ....84.50
Pittsburgh J5 ....84.50
Seattle B3 ....98.00
S.Chicago R2,U5,W14..84.50
S.Duquesne,Pa. U5 ...84.50
S.SanFrancisco B3 ...94.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 ...$96.00
Buffalo R2 ....96.00
Canton,O. R2, T7 ....96.00
Conshohocken,Pa. A3..103.00
Detroit R7 ....96.00
Fontana,Calif. K1 ....115.00
Gary,Ind. U5 ....96.00
Houston 85 ....101.00
Ind.Harbor,Ind. Y1 ...96.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 ....116.00
Massillon,O. R2 ....96.00
Midland,Pa. C18 ....96.00
Munhall,Pa. U5 ....96.00
S.Chicago R2,U5,W14..96.00
S.Duquesne,Pa. U5 ...96.00
Struthers,O. Y1 ....96.00
Warren,O. C17 ....96.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 ....$103.50
Canton,O. R2 ....103.50
Cleveland R2 ....103.50
Gary,Ind. U5 ....103.50
S.Chicago R2, W14 ..103.50
S.Duquesne,Pa. U5 ..103.50

SKELP

Aliquippa,Pa. J5 ....4.325
LoneStar,Tex. L6 ....4.30
Munhall,Pa. U5 ....4.225
SparrowsPoint,Md. B2..4.225
Warren,O. R2 ....4.225
Youngstown R2, U5 ...4.225

WIRE RODS

AlabamaCity,Ala. R2 ..5.025
Aliquippa,Pa. J5 ....5.025
Alton,Ill. L1 ....5.20
Buffalo B11, W12 ....5.025
Cleveland A7 ....5.025
Donora,Pa. A7 ....5.025
Fairfield,Ala. T2 ....5.025
Houston 85 ....5.275
IndianaHarbor,Ind. Y1 .5.025
Johnstown,Pa. B2 ....5.025
Joliet,Ill. A7 ....5.025
KansasCity,Mo. 85 ....5.275
Kokomo,Ind. C16 ....5.125
LosAngeles B3 ....5.825
Minnequa,Colo. C10....5.275
Monessen,Pa. P7 ....5.025
N.Tonawanda,N.Y. B11.5.025
Pittsburg,Calif. C11 ...5.675
Portsmouth P12 ....5.025
Roebling,N.J. R5 ....5.125
S.Chicago,Ill. R2 ....5.025
SparrowsPoint,Md. B2..5.125
Sterling,Ill.(1) N15 ....5.025
Sterling,Ill. N15 ....5.125
Struthers,O. Y1 ....5.025
Worcester,Mass. A7 ...5.325

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 ....4.60
Aliquippa,Pa. J5 ....4.60
Bessemer,Ala. T2 ....4.60
Bethlehem,Pa. B2 ....4.65
Birmingham C15 ....4.60
Clairton,Pa. U5 ....4.60
Fairfield,Ala. T2 ....4.60
Fontana,Calif. K1 ....5.25
Gary,Ind. U5 ....4.60
Geneva,Utah C11 ....4.60
Houston 85 ....4.70
Ind.Harbor,Ind. I-2 ....4.60
Johnstown,Pa. B2 ....4.65
KansasCity,Mo. 85 ....4.70
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 ....5.30
Minnequa,Colo. C10 ....4.90
Munhall,Pa. U5 ....4.60
Niles,Calif. P1 ....4.90
Portland,Oreg. O4 ....5.35
Phoenixville,Pa. P4 ...5.15
Seattle B3 ....5.35
S.Chicago U5, W14 ....4.60
S.SanFrancisco B3 ....5.25
Torrance,Calif. C11 ....5.30
Weirton,W.Va. W6 ....4.60

Wide Flange

Bethlehem,Pa. B2 ....4.65
Clairton,Pa. U5 ....4.60
Fontana,Calif. K1 ....5.40
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 ....4.60
Phoenixville,Pa. P4 ...5.15
S.Chicago,Ill. U5 ....4.60

Alloy Std. Shapes

Clairton,Pa. U5 ....5.65
Fontana,Calif. K1 ....7.30
Gary,Ind. U5 ....5.65
Houston 85 ....5.75
Munhall,Pa. U5 ....5.65
S.Chicago,Ill. U5 ....5.65

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 ....6.75
Bessemer,Ala., T2 ....6.75
Bethlehem,Pa. B2 ....6.80
Clairton,Pa. U5 ....6.75
Fairfield,Ala. T2 ....6.75
Fontana,Calif. K1 ....7.40
Gary,Ind. U5 ....6.75
Geneva,Utah C11 ....6.75
Houston 85 ....6.85
Ind.Harbor,Ind. I-2, Y1.6.75
Johnstown,Pa. B2 ....6.80
KansasCity,Mo. 85 ....6.85
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 ....7.46
Munhall,Pa. U5 ....6.75
Seattle B3 ....7.50
S.Chicago,Ill. U5, W14..6.75
S.SanFrancisco B3 ....7.40
Struthers,O. Y1 ....6.75

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ....6.80
Lackawanna,N.Y. B2 ...6.80
Munhall,Pa. U5 ....6.75
S.Chicago,Ill. U5 ....6.75

PILING

BEARING PILES

Bethlehem,Pa. B2 ....4.65
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 ....4.60
S.Chicago,Ill. U5 ....4.60

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....5.45
Lackawanna,N.Y. B2 ...5.45
Munhall,Pa. U5 ....5.45
S.Chicago,Ill. U5 ....5.45

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 ....4.50
Aliquippa,Pa. J5 ....4.50
Ashland,Ky.(15) A10 ...4.50
Bessemer,Ala. T2 ....4.50
Bridgeport,Conn. N19 ...4.75
Buffalo R2 ....4.50
Clairton,Pa. U5 ....4.50
Claymont,Del. C22 ....4.50
Cleveland J5, R2 ....4.60
Coatesville,Pa. L7 ....4.50
Conshohocken,Pa. A3 ...4.50
Detroit M1 ....4.60
Ecorse,Mich. G5 ....4.60
Fairfield,Ala. T2 ....4.50
Fontana,Calif.(30) K1 ..5.15
Gary,Ind. U5 ....4.50
Geneva,Utah C11 ....4.50
GraniteCity,Ill. G4 ....4.70
Harrisburg,Pa. C5 ....5.10
Houston 85 ....4.60
Ind.Harbor,Ind. I-2, Y1.4.50
Johnstown,Pa. B2 ....4.50
Lackawanna,N.Y. B2 ...4.50
LoneStar,Tex. L6 ....4.55
Mansfield,O. E6 ....4.50
Minnequa,Colo. C10 ....5.35
Munhall,Pa. U5 ....4.50
Newport,Ky. N9 ....4.60
Pittsburgh J5 ....4.50
Riverdale,Ill. A1 ....4.50
Seattle B3 ....5.40
Sharon,Pa. S3 ....4.50
S.Chicago R2, U5, W14.4.50
SparrowsPoint,Md. B2 ..4.50
Steubenville,O. W10 ....4.50
Warren,O. R2 ....4.50
Weirton,W.Va. W6 ....4.50
Youngstown R2, U5, Y1.4.50

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ....6.30
Geneva,Utah C11 ....5.65
Johnstown,Pa. B2 ....5.65
SparrowsPoint,Md. B2 ..5.65

PLATES, Wrought Iron

Economy,Pa. B14 ....10.40

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5 ....6.725
Bessemer,Ala. T2 ....6.725
Clairton,Pa. U5 ....6.725
Cleveland J5, R2 ....6.725
Coatesville,Pa. L7 ....6.725
Conshohocken,Pa. A3 ..6.725
Ecorse,Mich. G5 ....6.825
Fairfield,Ala. T2 ....6.725
Fontana,Calif.(30) K1..7.375
Gary,Ind. U5 ....6.725
Geneva,Utah C11 ....6.725
Houston 85 ....6.825
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 ....6.725
LosAngeles B3 ....7.625
Munhall,Pa. U5 ....6.725
Pittsburgh J5 ....6.725
Seattle B3 ....7.625
Sharon,Pa. S3 ....6.725
S.Chicago,Ill. U5, W14.6.725
SparrowsPoint,Md. B2..6.725
Youngstown U5, Y1 ...6.725

PLATES, Alloy

Bridgeport,Conn. N19 ...6.55
Claymont,Del. C22 ....6.30
Coatesville,Pa. L7 ....6.30
Fontana,Calif. K1 ....6.95
Gary,Ind. U5 ....6.30
Houston 85 ....6.40
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 ....6.30
Munhall,Pa. U5 ....6.30
Newport,Ky. N9 ....6.30
Seattle B3 ....7.20
Sharon,Pa. S3 ....6.30
S.Chicago,Ill. U5, W14..6.30
SparrowsPoint,Md. B2 ..6.30
Youngstown Y1 ....6.30

FLOOR PLATES

Cleveland J5 ....5.575
Conshohocken,Pa. A3 ..5.575
Harrisburg,Pa. C5 ....5.575
Ind.Harbor,Ind. I-2 ....5.575
Munhall,Pa. U5 ....5.575
S.Chicago,Ill. U5 ....5.575

PLATES, Ingot Iron

Ashland c.l. (15) A10...4.75
Ashland l.c.l. (15) A10..5.25
Cleveland c.l. R2 ....5.10
Warren,O. c.l. R2 ....5.10

BARS

BARS, Hot-Rolled Carbon

Ala.City,Ala. R2 ....4.65
Aliquippa,Pa. J5 ....4.65
Alton,Ill. L1 ....4.85
Atlanta A11 ....4.85
Bessemer,Ala. T2 ....4.65
Birmingham C15 ....4.65
Bridgeport,Conn. N19 ...4.80
Buffalo R2 ....4.65
Canton,O. R2 ....4.75
Clairton,Pa. U5 ....4.65
Cleveland R2 ....4.65
Ecorse,Mich. G5 ....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 ....4.65
FairlessHills,Pa. U5 ....4.80
Fontana,Calif. K1 ....5.35
Gary,Ind. U5 ....4.65
Houston 85 ....4.90
Ind.Harbor,Ind. I-2, Y1.4.65
Johnstown,Pa. B2 ....4.65
Joliet,Ill. P22 ....4.65
KansasCity,Mo. 85 ....4.90
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 ....5.35
Massillon,O. R2 ....4.75
Midland,Pa. C18 ....4.65
Milton,Pa. M18 ....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 ....5.00
N.Tonawanda,N.Y. B11..4.65
Pittsburg,Calif. C11 ....5.35
Pittsburgh J5 ....4.65
Portland,Oreg. O4 ....5.40
Seattle B3, N14 ....5.40
S.Chicago R2, U5, W14.4.65
S.Duquesne,Pa. U5 ....4.65
S.SanFran.,Calif. B3 ...5.40
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 ....4.75
Struthers,O. Y1 ....4.65
Torrance,Calif. C11 ....5.35
Warren,O. R2 ....4.65
Weirton,W.Va. W6 ....4.65
Youngstown R2, U5 ....4.65

BARS, H.R. Leaded Alloy

Warren,O. C17 ....6.325

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ....5.575
Bridgeport,Conn. N19 ..5.725
Buffalo R2 ....5.575
Canton,O. R2, T7 ....5.575
Clairton,Pa. U5 ....5.575
Detroit R7 ....5.575
Ecorse,Mich. G5 ....5.675
Fontana,Calif. K1 ....6.625
FairlessHills,Pa. U5 ...5.725
Gary,Ind. U5 ....5.575
Houston 85 ....5.825
Ind.Harbor,Ind. I-2, Y1.5.575
Johnstown,Pa. B2 ....5.575
KansasCity,Mo. 85 ....5.825
Lackawanna,N.Y. B2 ..5.575
LosAngeles B3 ....6.625
Massillon,O. R2 ....5.575
Midland,Pa. C18 ....5.575
S.Chicago R2, U5, W14.5.575
S.Duquesne,Pa. U5 ..5.575
Struthers,O. Y1 ....5.575
Warren,O. C17 ....5.575
Youngstown U5 ....5.575

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy

Aliquippa,Pa. J5 ....6.80
Bessemer,Ala. T2 ....6.80
Bethlehem,Pa. B2 ....6.80
Clairton,Pa. U5 ....6.80
Cleveland R2 ....6.80
Ecorse,Mich. G5 ....6.90
Fairfield,Ala. T2 ....6.80
Fontana,Calif. K1 ....7.50
Gary,Ind. U5 ....6.80
Houston 85 ....7.05
Ind.Harb.,Ind. I-2, Y1...6.80
Johnstown,Pa. B2 ....6.80
KansasCity,Mo. 85 ....7.05
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 ....7.50
Pittsburgh J5 ....6.80
Seattle B3 ....7.55
S.Chicago W14 ....6.80
S.Duquesne,Pa. U5 ....6.80
S.SanFrancisco B3 ....7.55
Struthers,O. Y1 ....6.80
Warren,O. R2 ....6.80
Youngstown U5 ....6.80

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 ....4.80

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 ....4.65
Atlanta A11 ....4.85
Fontana,Calif. K1 ....5.35
Niles,Calif. P1 ....5.00
Pittsburgh J5 ....4.30
Portland,Oreg. O4 ....5.05
SanFrancisco S7 ....5.05

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 ....5.65
Gary,Ind. U5 ....5.65
Houston 85 ....5.90
KansasCity,Mo. 85 ....5.90
Youngstown U5 ....5.65

BARS, C.F. Leaded Alloy

Ambridge,Pa. W18 ...8.325
Camden,N.J. P13 ....8.50
Chicago W18 ...8.325
Cleveland C20 ...8.325
Monaca Pa. S17 ....8.325
Newark,N.J. W18 ...8.50
SpringCity,Pa. K3 ....8.50
Warren,O. C17 ....8.325

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ....5.90
BeaverFalls,Pa. M12, R2..5.90
Buffalo B5 ....5.95
Camden,N.J. P13 ....6.35
Carnegie,Pa. C12 ....5.90
Chicago W18 ....5.90
Cleveland A7, C20 ....5.90
Detroit R7 ....5.90
Detroit B5, P17 ....6.10
Donora,Pa. A7 ....5.90
Elyria,O. W8 ....5.90
FranklinPark,Ill. N6 ...5.90
Gary,Ind. R2 ....5.90
GreenBay,Wis. F7 ....5.90
Hammond,Ind. L2, M13..5.90
Hartford,Conn. R2 ....6.40
Harvey,Ill. B5 ....5.90
LosAngeles R2, S30 ....7.35
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8 ....5.90
Midland,Pa. C18 ....5.90
Monaca,Pa. S17 ....5.90
Newark,N.J. W18 ....6.35
NewCastle,Pa.(17) B4 ..5.90
Pittsburgh J5 ....5.90
Plymouth,Mich. P5 ....6.15
Putnam,Conn. W18 ....6.45
Readville,Mass. C14 ....6.45
S.Chicago,Ill. W14 ....5.90
SpringCity,Pa. K3 ....6.35
Struthers,O. Y1 ....5.90
Waukegan,Ill. A7 ....5.90
Worcester,Mass. W19 ...6.35
Youngstown F3, Y1 ....5.90

BARS, Cold-Finished Carbon
(Turned and Ground)

Cumberland,Md. C19 ...5.15

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....7.425
BeaverFalls,Pa. M12,R2 7.425
Bethlehem,Pa. B2 ....7.425
Buffalo B5 ....7.425
Camden,N.J. P13 ....7.60
Canton,O. T7 ....7.425
Carnegie,Pa. C12 ....7.425
Chicago W18 ....7.425
Cleveland A7, C20 ....7.425
Detroit R7 ....7.425
Detroit B5, P17 ....7.625
Donora,Pa. A7 ....7.425
Elyria,O. W8 ....7.425
Gary,Ind. R2 ....7.425
GreenBay,Wis. F7 ....7.425
Hammond,Ind. L2, M13..7.425
Hartford,Conn. R2 ....7.725
Harvey,Ill. B5 ....7.425
Lackawanna,N.Y. B2 ..7.425
LosAngeles S30 ....9.10
Mansfield,Mass. B5 ...7.725
Massillon,O. R2, R8 ...7.425
Midland,Pa. C18 ....7.425
Monaca,Pa. S17 ....7.425
Newark,N.J. W18 ....7.60
Plymouth,Mich. P5 ....7.625
S.Chicago W14 ....7.425
SpringCity,Pa. K3 ....7.60
Struthers,O. Y1 ....7.425
Warren,O. C17 ....7.425
Waukegan,Ill. A7 ....7.425
Worcester,Mass. A7 ...7.725
Youngstown F3, Y1 ...7.425

BARS, Reinforcing
(To Fabricators)

Ala.City,Ala. R2 ....4.65
Atlanta A11 ....4.85
Birmingham C15 ....4.65
Buffalo R2 ....4.65
Cleveland R2 ....4.65
Ecorse,Mich. G5 ....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 ....4.65
FairlessHills,Pa. U5 ....4.80
Fontana,Calif. K1 ....5.35
Ft. Worth,Tex.(42) T4 ..5.10
Gary,Ind. U5 ....4.65
Houston 85 ....4.90

Ind.Harbor,Ind. I-2, Y1.4.65
Johnstown,Pa. B2 .....4.65
Joliet,Ill. P22 .....4.65
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.35
Milton,Pa. M18 .....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 .....5.00
Pittsburg,Calif. C11 ....5.35
Pittsburgh J5 .....4.65
Portland,Oreg. O4 .....5.40
SandSprings,Okla. S6 ..5.15
Seattle B3, N14 .....5.40
S.Chicago R2 .....4.65
S.Duquesne,Pa. U5 ....4.65
S.SanFrancisco B3 ....5.40
SparrowsPoint,Md. B2 ..4.65
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 .....4.75
Struthers,O. Y1 .....4.65
Torrance,Calif. C11 ....5.35
Youngstown R2, U5, Y1..4.65

BARS, Reinforcing
(Fabricated; to Consumers)

Johnstown,Pa. ¼-1" B2.6.15
KansasCity,Kans. S5 ...6.45
Lackawanna,N.Y. B2 ...6.17
Marion,O. P11 .....5.90
Pittsburgh U8 .....6.17
Seattle B3, N14 .....6.60
SparrowsPt. ¼-1" B2 ..6.15
Williamsport,Pa. S19 ...6.00

RAIL STEEL BARS

Avis,Pa.(3) J8 .....4.25
ChicagoHts.(3) C2, I-2..4.55
ChicagoHts.(4) C2, I-2..4.65
Ft.Worth,Tex.(26) T4 ..4.95
Franklin,Pa.(3) F5 .....4.55
Franklin,Pa.(4) F5 .....4.65
Marion,O.(3) P11 .....4.50
Moline,Ill.(3) R2 .....4.65
Tonawanda(3) B12 .....4.50
Tonawanda(4) B12 .....4.65
Williamsport,Pa.(3) S19.4.65

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 11.50
Economy,Pa.(D.R.)B14 14.30
Economy(Staybolt) B14 14.66
McK.Rks.(S.R.) L5 ...11.50
McK.Rks.(D.R.) L5 ...16.00
McK.Rks.(Staybolt) L5.17.00

SHEETS

SHEETS, Hot-Rolled Steel
(18 Gage and Heavier)

Ala.City,Ala. R2 .....4.325
Allenport,Pa. P7 .....4.325
Ashland,Ky.(8) A10 ...4.325
Cleveland J5, R2 .....4.325
Conshohocken,Pa. A3 ..4.375
Detroit(8) M1 .....4.425
Dravosburg,Pa. U5 ....4.325
Ecorse,Mich. G5 .....4.425
Fairfield,Ala. T2 .....4.325
FairlessHills,Pa. U5 ...4.375
Fontana,Calif. K1 .....5.075
Gary,Ind. U5 .....4.325
Geneva,Utah C11 .....4.425
GraniteCity,Ill. G4 ....4.525
Ind.Harbor,Ind. I-2, Y1.4.325
Kokomo,Ind. C16 .....4.425
Lackawanna,N.Y. B2 ..4.325
Mansfield,O. E6 (37)..4.325
Munhall,Pa. U5 .....4.325
Newport,Ky.(8) N9 ...4.325
Niles,O. N12 .....4.325
Pittsburg,Calif. C11 ...5.025
Pittsburgh J5 .....4.325
Portsmouth,O. P12 ....4.325
Riverdale,Ill. A1 .....4.325
Sharon,Pa. S3 .....4.325
S.Chicago,Ill. W14 ....4.325
SparrowsPoint,Md. B2..4.325
Steubenville,O. W10 ...4.325
Warren,O. R2 .....4.325
Weirton,W.Va. W6 ....4.325
Youngstown U5, Y1 ...4.325

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 .....5.625
Kokomo,Ind. C16 .....5.475
Niles,O. N12 .....5.325

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 .....7.20
Youngstown Y1 .....7.20

SHEETS, H.R. (14 Ga. & Heavier)
High-Strength Low-Alloy

Cleveland J5, R2 .....6.375
Conshohocken,Pa. A3 ..6.425
Dravosburg,Pa. U5 ....6.375
Ecorse,Mich. G5 .....6.475
Fairfield,Ala. T2 .....6.375
FairlessHills,Pa. U5 ...6.425
Fontana,Calif. K1 .....7.125
Gary,Ind. U5 .....6.375
Ind.Harbor,Ind. I-2, Y1 6.375
Lackawanna(35) B2 ...6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
Sharon,Pa. S3 .....6.375
S.Chicago,Ill. U5 .....6.375
SparrowsPoint(36) B2..6.375
Warren,O. R2 .....6.375
Weirton,W.Va. W6 ....6.375
Youngstown U5, Y1 ...6.375

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)

Ashland,Ky.(8) A10 ...4.575
Cleveland R2 .....4.925
Ind.Harbor,Ind. I-2 ...4.575
Warren,O. R2 .....4.925

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Allenport,Pa. P7 .....5.325
Cleveland J5, R2 .....5.325
Conshohocken,Pa. A3 ..5.375
Dravosburg,Pa. U5 ....5.325
Detroit M1 .....5.325
Ecorse,Mich. G5 .....5.425
Fairfield,Ala. T2 .....5.325
FairlessHills,Pa. U5 ...5.375
Follansbee,W.Va. F4 ..5.325
Fontana,Calif. K1 .....6.425
Gary,Ind. U5 .....5.325
GraniteCity,Ill. G4 ....5.525
Ind.Harbor,Ind. I-2, Y1 5.325
Lackawanna,N.Y. B2 ..5.325
Mansfield,O. E6 .....5.325
Middletown,O. A10 ....5.325
Newport,Ky. N9 .....5.325
Pittsburg,Calif. C11 ...6.275
Pittsburgh J5 .....5.325
Portsmouth,O. P12 ....5.325
SparrowsPoint,Md. B2..5.325
Steubenville,O. W10 ...5.325
Warren,O. R2 .....5.325
Weirton,W.Va. W6 ....5.325
Youngstown Y1 .....5.325

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 .....7.875
Dravosburg,Pa. U5 ....7.875
Ecorse,Mich. G5 .....7.976
FairlessHills,Pa. U5 ...7.925
Fontana,Calif. K1 .....8.975
Gary,Ind. U5 .....7.875
IndianaHarbor,Ind. Y1.7.875
Lackawanna(37) B2 ...7.875
Pittsburgh J5 .....7.875
SparrowsPoint(38) B2..7.875
Warren,O. R2 .....7.875
Weirton,W.Va. W6 ....7.875
Youngstown Y1 .....7.875

SHEETS, Cold-Rolled Ingot Iron

Middletown,O. A10 ....5.825

SHEETS, Culvert (16 Gage)	Cu Alloy	Cu Fe
Ashland,Ky.	A10.6.90	...
Canton,O.	R2 ....6.50	7.10
Dravosburg	U5 ..6.10	...
Fairfield	T2 .....6.10	...
Gary,Ind.	U5 ....6.10	6.35
Ind.Harbor	I-2 ..6.10	6.35
Kokomo,Ind.	C16..6.20	...
MartinsFry.	W10.6.10	...
Newport,Ky.	N9..6.10	6.35
Pitts.,Calif.	C11..6.85	...
SparrowsPt.	B2 ..6.10	...

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 .....7.15
Gary, Ind. U5 .....5.95
MartinsFry,O. W10 .....6.35

SHEETS, Galvanized Steel
Hot-Dipped

Ala.City,Ala. R2 .....5.85‡
Ashland,Ky. A10 .....5.85†
Canton,O. R2 .....5.85‡
Delphos,O. N16 .....6.60‡
Dover,O. R1 .....5.85‡
Dravosburg,Pa. U5 ....5.85†
Fairfield,Ala. T2 .....5.85†
Gary,Ind. U5 .....5.85*
GraniteCity,Ill. G4 .....6.06
Ind.Harbor,Ind. I-2 ...5.85†
Kokomo,Ind. C16 .....5.95‡
MartinsFerry,O. W10 ...5.85*
Middletown,O. A10 ....5.85†
Newport, Ky. N9 .....5.85‡
Niles,O. N12 .....6.85‡
Pittsburg,Calif. C11 ...6.60*
SparrowsPt.,Md. B2 ...5.85†
Steubenville,O. W10 ...5.85‡
Warren,O. R2 .....5.85†
Weirton,W.Va. W6 ....5.85*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .....6.575

SHEETS, Galvanized
High-Strength Low-Alloy

Dravosburg,Pa. U5 ....8.60
SparrowsPoint(39) B2 ..8.60

SHEETS, Galvannealed Steel

Canton,O. R2 .....6.25
Dravosburg,Pa. U5 ....6.25
Kokomo,Ind. C16 .....6.60
Newport,Ky. N9 .....6.25
Niles,O. N12 .....7.25

SHEETS, Galvanized Ingot Iron
(Hot-dipped Continuous)

Ashland,Ky. A10 .....6.10
Middletown,O. A10 .....6.10

SHEETS, Electrogalvanized

Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 .....6.55

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) .8.50
Butler,Pa. A10 (type 2) .8.60

SHEETS, Enameling Iron

Ashland,Ky. A10 .....5.90
Cleveland R2 .....5.90
Dravosburg,Pa. U5 ....5.90
Gary,Ind. U5 .....5.90
GraniteCity,Ill. G4 .....6.10
Ind.Harbor,Ind. I-2 ....5.90
Middletown,O. A10 .....5.90
Niles,O. N12 .....5.90
Youngstown Y1 .....5.90

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4....7.75
Yorkville,O. W10 .....7.75

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBottom,W.Va. W10 6.25
Gary,Ind. U5 .....6.25
Mansfield,O. E6 .....6.25
Middletown,O. A10 .....6.25
Niles,O. N12 .....6.25
Weirton,W.Va. W6 .....6.25

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....6.65

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.325
Allenport,Pa. P7	4.325
Alton,Ill. L1	4.50
Ashland,Ky.(8) A10	4.325
Atlanta A11	4.525
Bessemer,Ala. T2	4.325
Birmingham C15	4.325
Bridgeport,Conn. N19	4.625
Buffalo(27) R2	4.325
Conshohocken,Pa. A3	4.375
Detroit M1	4.425
Ecorse,Mich. G5	4.425
Fairfield,Ala. T2	4.325
Fontana,Calif. K1	5.075
Gary,Ind. U5	4.325
Ind.Harbor,Ind. I-2, Y1	4.325
Johnstown,Pa.(25) B2	4.325
Lackaw'na,N.Y.(25) B2	4.325
LosAngeles(25) B3	5.075
Milton,Pa. M18	4.325
Minnequa,Colo. C10	5.425
NewBritain(10) S15	4.325
N.Tonawanda,N.Y. B11	4.325
Pittsburg,Calif. C11	5.075
Portsmouth,O. P12	4.325
Riverdale,Ill. A1	4.325
SanFrancisco S7	5.05
Seattle(25) B3	5.325
Seattle N14	5.40
Sharon,Pa. S3	4.325
S.Chicago,Ill. W14	4.325
S.SanFrancisco(25) B3	5.075
SparrowsPoint,Md. B2	4.325
Sterling(1) N15	4.325
Sterling,Ill. N15	4.425
Torrance,Calif. C11	5.075
Warren,O. R2	4.325
Weirton,W.Va. W6	4.325
Youngstown U5	4.325

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19	7.50
Carnegie,Pa. S18	7.20
Fontana,Calif. K1	8.85
Gary,Ind. U5	7.20
Ind.Harbor,Ind. Y1	7.20
LosAngeles B3	8.40
Newport,Ky. N9	7.20
Sharon,Pa. S3	7.20
S.Chicago W14	7.20
Youngstown U5, Y1	7.20

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	6.425
Conshohocken,Pa. A3	6.425
Ecorse,Mich. G5	6.525
Fairfield,Ala. T2	6.425
Fontana,Calif. K1	7.525
Gary,Ind. U5	6.425
Houston S5	6.675
Ind.Harbor,Ind. I-2, Y1	6.425
KansasCity,Mo. S5	6.675
Lackawanna,N.Y. B2	6.425
LosAngeles(25) B3	7.175
Seattle(25) B3	7.425
Sharon,Pa. S3	6.425
S.SanFrancisco(25) B3	7.175
SparrowsPoint,Md. B2	6.425
Warren,O. R2	6.425
Weirton,W.Va. W6	6.425
Youngstown U5, Y1	6.425

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	4.575
Warren,O. R2	4.925

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	6.25
Baltimore T6	6.25
Boston T6	6.80
Buffalo S40	6.25
Cleveland J5	6.45
Cleveland A7	6.25
Conshohocken,Pa. A3	6.30
Dearborn,Mich. D3	6.35
Detroit D2, M1, P20	6.35
Dover,O. G6	6.25
Ecorse,Mich. G5	6.35
Follansbee,W.Va. F4	6.25
Fontana,Calif. K1	8.00
FranklinPark,Ill. T6	6.35
Ind.Harbor,Ind. I-2	6.35
Ind.Harbor,Ind. Y1	6.45
Indianapolis C8	6.40
Lackawanna,N.Y. B2	6.25
LosAngeles C1	8.50
NewBedford,Mass. R10	6.70
NewBritain(10) S15	6.25
NewCastle,Pa. B4, E5	6.25
NewHaven,Conn. A7	7.00
NewHaven,Conn. D2	6.70
NewKensington,Pa. A6	6.25
Pawtucket,R.I. R3	6.90
Pawtucket,R.I. N8	6.80
Pittsburgh J5	6.45
Portsmouth,O. P12	6.25
Riverdale,Ill. A1	6.35
Rome,N.Y.(32) R6	6.25
Sharon,Pa. S3	6.25
SparrowsPt.,Md. B2	6.25
Trenton,N.J.(31) R5	7.80
Wallingford,Conn. W2	6.70
Warren,O. R2, T5	6.25
Weirton,W.Va. W6	6.25
Worcester,Mass. A7	7.10
Youngstown Y1	6.45
Youngstown C8	6.25

STRIP, Cold-Rolled Alloy

Boston T6	13.80
Carnegie,Pa. S18	13.45
Cleveland A7	13.45
Dover,O. G6	13.45
FranklinPark,Ill. T6	13.45
Harrison,N.J. C18	13.45
Indianapolis C8	13.60
Pawtucket,R.I. N8	13.80
Sharon,Pa. S3	13.45
Worcester,Mass. A7	13.75
Youngstown C8	13.45

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7	*9.10*
Dearborn,Mich. D3	9.20
Dover,O. G6	9.30
Ecorse,Mich. G5	9.20

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	7.30	9.25	10.80	12.95	15.65
Boston T6	7.55	9.25	10.80	12.95	15.65
Bristol,Conn. W1	...	...	10.80	12.95	....
Carnegie,Pa. S18	...	8.95	10.50	12.65	....
Cleveland A7	7.00	8.95	10.50	12.65	15.35
Cleveland C7	...	8.95	10.50	12.65	15.35
Dearborn,Mich. D3	7.10	9.05	10.60	....	....
Detroit D2	7.10	9.05	10.60	12.75	....
Dover,O. G6	7.00	8.95	10.50	12.65	15.35
Follansbee,W.Va. F4	7.40	8.95	10.50**	....	....
FranklinPark,Ill. T6	7.10	8.95	10.50	12.65	15.35
Harrison,N.J. C18	...	...	10.80	12.95	15.65
Indianapolis C8	7.15	9.10	10.50	12.65	15.35
NewBritain,Conn.(10) S15	7.00	8.95	10.50	12.65	15.35
NewCastle,Pa. B4, E5	7.00	8.95	10.50	12.65	....
NewHaven,Conn. D2	7.45	9.25	10.80	12.95	....
NewKensington,Pa. A6	7.00	8.95	10.50	....	....
NewYork W3	...	9.25	10.80	12.95	15.65
Pawtucket,R.I. N8	7.55	9.25	10.80	12.95	15.35
Riverdale,Ill. A1	7.10	8.95	10.50	12.65	15.35
Rome,N.Y.(32) R6	7.00	8.95	10.50	12.65	15.35
Sharon,Pa. S3	7.00	8.95	10.50	12.65	15.35
Trenton,N.J. R5	...	9.25	10.80	12.95	15.65
Wallingford,Conn. W2	7.45	9.25	10.80	12.95	15.65
Warren,O. T5	7.00	8.95	10.50	12.65	15.35
Weirton,W.Va. W6	7.00	8.95	10.50	12.65	15.35
Worcester,Mass. T6	7.55	9.25	10.80	12.95	15.65
Worcester,Mass. A7	7.85	9.25	10.80	12.95	15.65
Youngstown C8	7.00	8.95	10.50	12.65	15.35

**0.065 C, max.

Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	14.40	17.60	....
Buffalo W12	...	...	14.40	....	....
FranklinPark,Ill. T6	...	...	14.90	18.10	21.50
Harrison,N.J. C18	...	...	14.40	17.60	21.00
NewYork W3	...	...	14.40	17.60	21.00
Trenton,N.J. R5	...	...	14.40	17.60	21.00
Worcester,Mass. A7, T6	...	...	14.40	17.60	21.00
Worcester,Mass. W12	...	...	14.40	....	....
Youngstown C8	...	...	14.75	17.95	21.35

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	...	...	9.95	10.95	11.85
Brackenridge,Pa. A4	...	...	9.95	10.95	11.85
Mansfield,O. E6	8.40	9.35	9.95	10.95	11.85
Newport,Ky. N9	8.40	9.35	9.95	10.95	11.85
Niles,O. N12	8.40	9.35	9.95	10.95	....
Vandergrift,Pa. U5	...	9.35	9.95	10.95	11.85
Warren,O. R2	8.40	9.35	9.95	10.95	11.85
Zanesville,O. A10	...	9.35	9.95	10.95	11.85

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	....	....	10.70	11.70	12.60
GraniteCity,Ill. G4	8.50*	9.80*	10.40*	11.40*	....
IndianaHarbor,Ind. I-2	8.50†	9.60*	10.20*	11.20*	....
Vandergrift,Pa. U5	....	10.10†	10.70†	11.70†	12.60†
Vandergrift,Pa. U5	8.50*	9.60*	10.20*	11.20*	12.10*
Warren,O. R2	8.50†	10.10	10.70	11.70	12.60
Zanesville,O. A10	....	10.10	10.70	11.70	12.60

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	12.80	13.35	13.85	14.85
Brackenridge,Pa. A4	12.80	....	....	....
Newport,Ky. N9	12.80	....	....	....
Vandergrift,Pa. U5	12.80	13.35	13.85	14.85
Zanesville,O. A10	12.80§	13.35§	13.85§	14.85§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.85	17.45	17.95	13.55§
Butler,Pa. A10	....	....	17.45	17.95	....
Vandergrift,Pa. U5	14.85	15.85	17.45	17.95	13.55
Warren,O. R2	....	....	....	....	13.55†

*Semiprocessed. †Fully processed only. ‡Coils annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

Ind.Harbor,Ind. Y1 ....9.30
Lackawanna,N.Y. B2 ..9.125
Sharon,Pa. S3 ....9.10
SparrowsPoint,Md. B2 ..9.125
Warren,O. R2 ....9.10
Weirton,W.Va. W6 ....9.10
Youngstown Y1 ....9.30

STRIP, Electrogalvanized

Cleveland A7	*6.25**
Dover,O. G6	6.25*
Riverdale,Ill. A1	6.55*
Youngstown C8	6.25*
Warren,O. T5	6.25*
Warren,O. B9	6.45*
Weirton,W.Va. W6	5.75*
Worcester,Mass. A7	*7.10**

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3	6.55

TIGHT COOPERAGE HOOP

Atlanta A11	5.05
Riverdale,Ill. A1	4.90
Sharon,Pa. S3	4.75
Youngstown U5	4.75

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Dravosburg,Pa. U5	7.50	7.75	8.15
Fairfield,Ala. T2	7.60	7.85	8.25
FairlessHills,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15
ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	6.175		
Niles,O. R2	6.675	6.875	7.075

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.80	$9.05
Dravosburg,Pa. U5	8.80	9.05
Fairfield,Ala. T2	8.90	9.15
Fairless,Pa. U5	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har. I-2, Y1	8.80	9.05
Pitts.Calif. C11	9.65	9.80
Sp.Pt.,Md. B2	8.90	9.15
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.60
Dravosburg,Pa. U5	6.60
Fairfield,Ala. T2	6.70
FairlessHills,Pa. U5	6.70
Gary,Ind. U5	6.60
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.60
Niles,O. R2	6.60
Pittsburg,Calif. C11	7.35
SparrowsPoint,Md. B2	6.70
Warren,O. R2	6.60
Weirton,W.Va. W6	6.60
Yorkville,O. W10	6.60

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5	6.65
Gary,Ind. U5	6.65
GraniteCity,Ill. G4	6.75
Ind.Harbor,Ind. Y1	6.65
Yorkville,O. W10	6.65

MANUFACTURING TERNES (Special Coated; Base Box)

Dravosburg,Pa. U5	$7.85
Gary,Ind. U5	7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10	$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	6.25
Aliquippa,Pa. J5	6.25
Alton,Ill. L1	6.425
Atlanta A11	6.45
Bartonville,Ill. K4	6.36
Buffalo W12	6.25
Chicago W13	6.25
Cleveland A7	6.25
Crawfordsville,Ind. M8	6.35
Donora,Pa. A7	6.25
Duluth,Minn. A7	6.25
Fairfield,Ala. T2	6.25
Fostoria,O.(24) S1	6.45
Houston S5	6.50
Jacksonville,Fla. M8	6.77
Johnstown,Pa. B2	6.25
Joliet,Ill. A7	6.25
KansasCity,Mo. S5	6.50
Kokomo,Ind. C16	6.35
LosAngeles B3	7.20
Minnequa,Colo. C10	6.50
Monessen Pa. P7	6.25
Newark 6-8 ga. I-1	6.90
N.Tonawanda B11	6.25
Palmer,Mass. W12	6.56
Pittsburg,Calif. C11	7.20
Portsmouth,O. P12	6.25
Rankin,Pa. A7	6.25
S.Chicago,Ill. R2	6.25
S.SanFrancisco C10	7.20
SparrowsPoint,Md. B2	6.35
Sterling,Ill.(1) N15	6.25
Sterling,Ill. N15	6.35
Struthers,O. Y1	6.25
Waukegan,Ill. A7	6.25
Worcester,Mass. A7	6.56

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	7.90
Alton,Ill. L1	8.075
Bartonville,Ill. K4	8.00
Buffalo W12	7.90
Cleveland A7	7.90
Donora,Pa. A7	7.90
Duluth,Minn. A7	7.90
Fostoria,O. S1	7.95
Johnstown,Pa. B2	7.90
LosAngeles B3	8.85
Milbury,Mass.(12) N6	8.20
Minnequa,Colo. C10	8.15
Monessen,Pa. P16	7.90
Muncie,Ind. I-7	8.10
Palmer,Mass. W12	8.20
Pittsburg,Calif. C11	8.85
Portsmouth,O. P12	7.90
Roebling,N.J. R5	8.20
S.Chicago,Ill. R2	7.90
S.SanFrancisco C10	8.85
SparrowsPt., Md. B2	8.00
Struthers,O. Y1	7.90
Trenton,N.J. A7	8.20
Waukegan,Ill. A7	7.90
WorcesterA7,J4,T6,W12	8.20

WIRE, Upholstery Spring

Aliquippa,Pa. J5	7.60
Alton,Ill. L1	7.775
Buffalo W12	7.60
Cleveland A7	7.60
Donora,Pa. A7	7.60
Duluth,Minn. A7	7.60
Johnstown,Pa. B2	7.60
KansasCity,Mo. S5	7.50
LosAngeles B3	8.55
Minnequa,Colo. C10	7.775
Monessen,Pa. P16	7.60
NewHaven,Conn. A7	7.90
Palmer,Mass. W12	7.90
Pittsburg,Calif. C11	8.55
Portsmouth,O. P12	7.60
Roebling,N.J. R5	7.90
S.Chicago,Ill. R2	7.60
S.SanFrancisco C10	8.55
SparrowsPoint,Md. B2	7.70
Struthers,O. Y1	7.60
Trenton,N.J. A7	7.90
Waukegan,Ill. A7	7.60
Worcester,Mass. A7	7.90

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1	12.725
Bartonville,Ill. K4	12.65
Buffalo W12	12.55
Chicago W13	12.55
Cleveland A7	12.55
Crawfordsville,Ind. M8	12.65
Fostoria,O. S1	12.55
Jacksonville,Fla. M8	13.08
Johnstown,Pa. B2	12.55
Kokomo,Ind. C16	*12.55*
Minnequa,Colo. C10	12.30
Monessen,Pa. P16	12.55
Muncie,Ind I-7	12.75
Palmer,Mass. W12	12.85
Roebling,N.J. R5	12.85
S.SanFrancisco C10	12.90
Waukegan,Ill. A7	12.56
Worcester,Mass. T6	12.85
Worcester,Mass. A7	12.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	10.70
Buffalo W12	10.70
Johnstown,Pa. B2	10.70
Minnequa,Colo. C10	10.825
Monessen,Pa. P16	10.70
Muncie,Ind. I-7	10.90
Portsmouth,O. P12	10.70
Roebling,N.J. R5	11.00
SparrowsPt.,Md. B2	10.80

ROPE WIRE (A)

Bartonville,Ill. K4	10.55
Buffalo W12	9.75
Fostoria,O.(23) S1	10.55
Johnstown,Pa. B2	10.55
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.05
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.85
SparrowsPt. B2	10.65
Struthers,O. Y1	10.55
Worcester,Mass. J4	10.85

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE

(Continued)

WIRE, Tire Bead

Bartonville,Ill. K4	14.15
Monessen,Pa. P16	14.20
Roebling,N.J. R5	14.35

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	9.00
Baltimore T6	9.30
Buffalo W12	9.00
Cleveland A7	9.00
Crawfordsville,Ind. M8	9.00
Dover,O. G6	9.00
Fostoria,O. S1	9.00
FranklinPark,Ill. T6	9.10
Kokomo,Ind. C16	9.00
Massillon,O. R8	9.00
Milwaukee C23	9.20
Monessen,Pa. P16	9.00
Pawtucket,R.I. N8	9.30
Riverdale,Ill A1	9.10
Rome,N.Y. R6	9.00
Trenton,N.J. R5	9.30
Worcester A7, T6, W12	9.30

NAIL, Stock

To Dealers & Mfrs. (7)	Col.
AlabamaCity,Ala. R2	152
Aliquippa,Pa. J5	152
Atlanta A11	154
Bartonville,Ill K4	154
Chicago,Ill. W13	152
Cleveland A9	157
Crawfordsville,Ind. M8	154
Donora,Pa. A7	152
Duluth,Minn. A7	152
Fairfield,Ala. T2	152
Galveston,Tex. D7	157
Houston,Tex. S5	157
Johnstown,Pa. B2	152
Joliet,Ill. A7	152
KansasCity,Mo. S5	157
Kokomo,Ind. C16	154
Minnequa,Colo. C10	157
Monessen,Pa. P7	152
Pittsburg,Calif. C11	171
Rankin,Pa. A7	152
S.Chicago,Ill. R2	152
SparrowsPt.,Md. B2	154
Sterling,Ill.(1) N15	152
Worcester, Mass. A7	158

NAILS, CUT (100 lb keg)

To Dealers (33)	
Conshohocken,Pa. A3	$9.05
Wheeling,W.Va. W10	9.05

STAPLES, Polished Stock

To Dealers & Mfrs. (7)	Col.
Aliquippa,Pa. J5	152
Atlanta A11	154
Bartonville,Ill. K4	154
Crawfordsville,Ind. M8	154
Donora,Pa. A7	152
Duluth,Minn. A7	152
Fairfield,Ala. T2	152
Johnstown,Pa. B2	152
Joliet,Ill. A7	152
Kokomo,Ind. C16	154
Minnequa,Colo. C10	157
Monessen,Pa. P7	152
Pittsburg,Calif. C11	171
Rankin,Pa. A2	152
SparrowsPt.,Md. B2	154
Sterling,Ill.(1) N15	152
Worcester,Mass. A7	158

TIE WIRE, Automatic Baler (14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$9.35
Bartonville,Ill. K4	9.45
Buffalo W12	9.35
Crawfordsville,Ind. M8	9.46
Donora,Pa. A7	9.35
Duluth,Minn. A7	9.35
Johnstown,Pa. B2	9.35
Joliet,Ill. A7	9.35
Kokomo,Ind. C16	9.45
LosAngeles B3	10.14
Minnequa,Colo. C10	9.60
S.Chicago,Ill. R2	9.35
SparrowsPt.,Md. B2	9.45
Sterling, Ill. N15	9.35
Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$9.65
Bartonville,Ill. K4	9.75
Buffalo W12	9.60
Crawfordsville,Ind. M8	9.75
Donora,Pa. A7	9.65
Duluth,Minn. A7	9.65
Johntown,Pa. B3	9.65
Joliet,Ill. A7	9.65
Kokomo,Ind. C16	9.75
LosAngeles B3	10.45
Minnequa,Colo. C10	9.90
S.Chicago,Ill. R2	9.65
SparrowsPt.,Md. B2	9.75
Sterling,Ill. N15	9.65
Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$9.70
Bartonville,Ill. K4	9.80
Buffalo W12	9.70
Crawfordsville,Ind. M8	9.80
Donora,Pa. A7	9.70
Duluth,Minn. A7	9.70
Johnstown,Pa. B2	9.70
Joliet,Ill. A7	9.70
Kokomo,Ind. C16	9.80
LosAngeles B3	11.05
Minnequa,Colo. C10	9.95
S.Chicago,Ill. R2	9.70
SparrowsPt.,Md. B2	9.80
Sterling,Ill. N15	9.70

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	175**
Aliquippa J5	172‡
Atlanta A11	181
Bartonville,Ill K4	181
Crawfordsville,Ind. M8	181
Donora,Pa. A7	175†
Duluth,Minn. A7	175†
Fairfield,Ala. T2	175†
Houston,Tex. S5	180†
Johnstown,Pa. B2	179*
Joliet,Ill. A7	175†
KansasCity,Mo. S5	180†
Kokomo,Ind. C16	177†
Minnequa,Colo. C10	180**
Monessen,Pa. P7	179*
Pittsburg,Calif. C11	195†
Rankin,Pa. A7	175†
S.Chicago,Ill. R2	175**
S.SanFrancisco C10	195**
SparrowsPoint,Md. B2	181*
Sterling,Ill.(1) N15	179*

WOVEN Fence, 9-15 Ga.

	Col.
Ala.City,Ala. R2	162**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga. J5	165‡
Atlanta A11	168
Bartonville,Ill. K4	168
Crawfordsville,Ind. M8	168
Donora,Pa. A7	162†
Duluth,Minn. A7	162†
Fairfield,Ala. T2	162†
Houston,Tex. S5	167†
Johnstown,Pa.(43) B2	166
Joliet,Ill. A7	162†
KansasCity,Mo. S5	167†
Kokomo,Ind. C16	164†
Minnequa,Colo. C10	167**
Monessen,Pa. 9 ga. P17	166*
Pittsburg,Calif. C11	185†
Rankin,Pa. A7	162†
S.Chicago,Ill. R2	162**
Sterling,Ill.(1) N15	166*

WIRE (16 Gage)	An'ld Stone	Galv. Stone
Ala.City R2	14.50	16.05**
Bartonville K4	14.60	16.50
Buffalo W12	14.50	...
Cleveland A7	14.50	...
Crawf'dsville M8	14.60	16.50
Fostoria,O. S1	14.60	16.15†
Johnstown B2	14.15	16.40*
Kokomo C16	14.60	16.15†
Minnequa C10	14.75	16.45**
Palmer,MassW12	14.50	16.05*
Pitts.,Calif C11	14.85	16.40†
S.Chicago R2	14.50	16.05**
SparrowsPt. B2	14.60	16.50*
Sterling(1) N15	14.50	16.40
Waukegan A7	14.50	16.05†
Worcester A7	14.80	...

WIRE, Merchant Quality (6 to 8 gage)	An'ld Galv.
Ala.City,Ala. R2	7.40 7.80**
Aliquippa J5	7.40 7.925‡
Atlanta A11	7.50 8.075
Bartonville(48) K4	7.50 8.075
Buffalo W12	7.40 8.80†
Cleveland A7	7.40 ...
Crawfordsville M8	7.50 8.075
Donora,Pa. A7	7.40 7.80†
Duluth,Minn. A7	7.40 7.80†
Fairfield T2	7.40 7.80†
Houston,Tex. S5	7.65 8.05†
Jacks'ville,Fla.M8	7.90 8.475
Johnstown B2(48)	7.40 7.975*
Joliet,Ill. A7	7.40 7.80†
KansasCity,Mo. S5	7.65 8.05†
Kokomo C16	7.50 7.90†
LosAngeles B3	8.35 8.925*
Minnequa C10	7.65 8.05**
Monessen P7 (48)	7.40 7.975*
Palmer,Mass. W12	7.70 8.10†
Pitts.,Calif C11	8.35 8.75†
Portsmouth,O. P12	7.40 ...
Rankin A7	7.40 7.80†
S.Chicago R2	7.40 7.80**
S.SanFran. C10	8.35 8.75**
Spar'wsPt.B2(48)	7.50 8.075*
Str'ling(1)(48)	N15 7.40 7.975*
Struthers,O.(48)	Y1 7.40 7.90‡
Worcester,Mass.	A7 7.70 ...

*Based on 12.50c zinc; †5c zinc; ‡10c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	173
Atlanta A11	175
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth,Minn. A7	173
Fairfield,Ala. T2	173
Joliet,Ill. A7	173
Houston S5	178
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
S.SanFran.,Calif. C10	197
SparrowsPoint,Md. B2	175
Sterling,Ill.(1) N15	173

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants)

4" and shorter:	
½" & smaller diam.	+5
Over 4" through 6":	
½" and smaller diam.	+12
6" and shorter:	
⅝" and ⅝"	+13
¾" and larger	+16
Longer than 6":	
All diameters	+25
Lag bolts, all diams:	
6" and shorter	+2
Over 6" long	+11
Ribbed Necked Carriage	+13
Blank	2
Plow	18
Step, Elevator, Tap and Sleigh Shoe	2
Tire Bolts	12
Boiler & Fitting-Up Bolts	14

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	51
H.P., Hex, regular & heavy	
¾" and smaller	55
⅞" to 1⅛", inclusive	55
1-¼" to 1½", inclusive	57
1⅝" and larger	51
C.P. Hex regular & heavy:	
¾" and smaller	55
Larger than ¾"	51
Hot Galv. Nuts (all types):	
¾" or smaller	38
⅞" to 1½", inclusive	36
Finished Hex Nuts:	
¾" and smaller	55
⅞" and larger	51
Semifinished & Slotted Hex:	
Regular and heavy, ⅜" and smaller	55
⅞" and larger	51

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages; plain finish)

3" and shorter:	
⅛" thru ¼" diam, 25,000 to 200,000 pieces	61
Over 200,000 pieces	64
5/16" thru ⅛" dia: 15,000 to 100,000 pieces	61
100,000 or more	64
Longer than 3", any diam: 5000 to 100,000 pieces	61
Over 100,000 pieces	64

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 9.95

7/16-in. under..List less 32%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	...	21.06	20.41
1¼	13	...	24.94	20.44
1½	13	23.31	27.57	22.60
1¾	13	27.54	32.57	26.71
2	13	30.87	36.51	29.93
2¼	13	34.77	41.12	33.72
2½	12	37.73	44.63	36.59
2¾	12	41.57	49.16	40.31
3	12	47.99	56.76	46.54

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Standard All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.725	4.625	4.675	5.65
Ensley,Ala. T2	4.725	4.625	...	5.65
Fairfield,Ala. T2	...	...	...	5.65
Gary,Ind. U5	4.725	...	...	...
Huntington,W.Va. W7	...	...	...	5.65
IndianaHarbor,Ind. I-2	4.725	4.625	4.675	...
Johnstown,Pa. B2	...	...	...(16)	5.65
Lackawanna,N.Y. B2	4.725	4.625	...	5.65
Minnequa,Colo. C10	4.725	4.625	...	6.15
Steelton,Pa. B2	4.725	4.625	...	...
Williamsport,Pa. S19	...	...	...	5.65

TIE PLATES

Fairfield,Ala. T2	5.625
Gary,Ind. U5	5.625
Ind.Harbor,Ind. I-2	5.625
Lackawanna,N.Y. B2	5.625
Minnequa,Colo. C10	5.625
Seattle B3	5.775
Steelton,Pa. B2	5.625
Torrance,Calif. C11	5.775

TRACK BOLTS (20) Treated

Cleveland R2	12.40
KansasCity,Mo. S5	*12.40*
Lebanon,Pa. B2	12.40
Minnequa,Colo. C10	12.40
Pittsburgh O3, P14	12.40
Seattle B3	12.90

AXLES

Ind.Harbor,Ind. S13	7.25
Johnstown,Pa. B2	7.25

JOINT BARS

Bessemer,Pa. U5	5.825
Fairfield,Ala. T2	5.825
Ind.Harbor,Ind. I-2	5.825
Joliet,Ill. U5	5.825
Lackawanna,N.Y. B2	5.825
Minnequa,Colo. C10	5.825
Steelton,Pa. B2	5.825

SCREW SPIKES

Cleveland R2	11.90
Pittsburgh O3	11.90

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.90
Ind.Harbor,Ind. I-2, Y1	7.90
KansasCity,Mo. S5	7.90
Lebanon,Pa. B2	7.90
Minnequa,Colo. C10	7.90
Pittsburgh J5	7.90
Seattle B3	8.40
S.Chicago,Ill. R2	7.90
Struthers,O. Y1	7.90
Youngstown R2	7.90

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.l.f. N. Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	21.00
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum: Atomized, 500 lb drums, frght. allowed	
Carlots	32.20
Ton lots	34.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	39.00-49.00†
Bronze, 5000-lb lots	58.00-61.50†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	94.00
Nickel-Silver, 5000-lb lots	53.25-60.00†
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	94.00
Stainless Steel, 316	$1.25
Tin	14.50**
Zinc, 5000-lb lots	18.25-32.00‡
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh	4.30-4.40
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago Base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Mild plow, 10.55c.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.15c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.45c H.S.-L.A.
(31) Widths over ⅝ in.; 6.90c for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.30c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Ambridge, Pa. N2	6.5	..	10.5	...	13	...	14.5	...	14.5	...	14	...	16.5	...
Lorain, O. N3	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Youngstown Y1	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Alton, Ill. L1	...	...	....	....	....	....	15.5	+1.75	18.5	2.25	21	5.75	23.5	7
Benwood, W. Va. W10	16.5	+12	7.25	+18.25	+1.75	+26.25	17.5	0.25	20.5	4.75	23	7.75	25.5	7
Butler, Pa. F6	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Etna, Pa. N2	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Fairless Hills, Pa. N3	...	...	....	....	....	....	15.5	+1.75	18.5	2.75	21	5.75	23.5	7
Fontana, Calif. K1	...	...	....	....	....	....	6	+11.25	9	+7.25	11.5	+3.75	14	+2.5
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	16.5	+0.75	19.5	3.25	22	6.75	24.5	8
Lorain, O. N3	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sharon, Pa. S4	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Sharon, Pa. M6	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sparrows Pt., Md. B2	23	+ 5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Youngstown R2, Y1	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Wheatland, Pa. W9	23	+ 5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
Aliquippa, Pa. J5	26	10	26.5	10.5	28	10.75	28	10.75	....	....	....	....
Alton, Ill. L1	24	8	24.5	8.5	26	8.75	26	8.75	....	....	....	....
Benwood, W. Va. W10	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Etna, Pa. N2	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Fairless Hills, Pa. N3	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+1.25
Fontana, Calif. K1	14.5	+1.5	15	+1	16.5	+0.75	16.5	+0.75	7	+10.75	7	+10.75
Ind. Harbor, Ind. Y1	25	9	25.5	9.5	27	9.75	27	9.75	17.5	+0.25	17.5	+0.25
Lorain, O. N3	26	10	26.5	10.5	28	10.75	28	10.75	....	....	....	....
Sharon, Pa. M6	26	10	26.5	10.5	28	10.75	28	10.75	....	....	....	....
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75

*Galvanized pipe discounts based on current price of zinc (12.50c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. Bars; H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	17.75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50
302B	20.25	26.50	33.00	37.25	37.75	38.25	40.25	48.00	48.00
303	....	26.75	34.75	40.00	....	41.00	....	....	....
304	20.25	26.00	33.75	39.00	37.25	40.25	43.00	47.25	47.25
304L	....	....	39.00	44.25	42.50	45.50	48.25	52.50	52.50
305	21.75	28.25	....	39.50	40.25	40.25	43.50	50.25	50.25
308	22.00	29.00	38.50	44.25	41.25	45.50	49.75	52.00	52.00
309	29.50	38.25	46.75	53.50	53.50	54.75	58.25	67.00	67.00
309S	31.50	41.00	51.00	59.00	58.50	60.25	63.75	74.00	74.00
310	37.25	48.00	62.25	72.25	68.50	73.50	75.25	78.75	78.75
314	....	....	....	....	....	....	75.25	....	....
316	31.50	40.25	51.25	59.50	58.25	60.75	64.00	68.25	68.25
316L	....	....	56.50	65.00	63.50	66.00	69.50	73.50	73.50
317	37.25	48.25	62.75	72.75	73.50	74.50	77.00	83.75	83.75
321	25.00	32.00	38.25	44.00	44.25	45.25	49.25	54.25	54.25
18-8CbTa	31.00	40.50	48.75	55.25	56.25	57.00	62.00	70.50	70.50
403	....	....	28.75	32.75	....	34.00	36.25	....	44.00
405	17.50	23.00	26.75	31.00	32.25	32.00	33.75	42.25	42.25
410	15.00	19.50	25.50	29.50	28.00	30.50	31.75	36.25	36.25
416	....	....	26.00	30.00	....	31.00	....	....	....
420	23.50	30.25	31.00	36.00	37.75	37.25	40.75	56.00	56.00
430	15.25	19.75	26.00	30.00	28.75	31.00	32.25	36.75	36.75
430F	....	....	26.50	30.50	....	31.50	....	....	....
431	16.00	20.50	26.50	30.50	29.75	31.50	33.00	38.00	38.00
446	....	....	35.50	40.50	53.25	42.00	43.25	63.25	63.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 20%
Stainless:			
302	....	....	30.50
304	30.30	36.05	32.50
304-L	32.30	37.95	....
310	41.30	47.00	....
316	35.50	41.40	47.00
316-L	40.00	46.10	....
316-CB	41.15	48.45	....
321	32.00	37.75	37.25
347	34.40	41.40	48.25
405	25.80	33.35	....
410	25.30	32.85	....
430	25.30	32.85	....
Inconel	49.45	65.45	....
Nickel	41.05	55.85	....
Nickel, Low Carbon	43.25	60.05	....
Monel	42.35	56.35	....
Copper*	....	....	46.00

	Strip, Carbon Base—Cold Rolled: 10%	Strip, Carbon Base—Cold Rolled: Both Sides
Copper*	26.60	33.00

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular carbon	0.275	5%Cr Hot Work	0.430-0.460
Extra Carbon	0.330	W-Cr Hot Work	0.450
Special Carbon	0.390	V-Cr Hot Work	0.470
Oil Hardening	0.430	Hi-Carbon-Cr	0.770

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.090
18.25	4.25	1	4.75	...	2.305-2.475
18	4	2	9	...	2.675-2.6775
18	4	2	....	...	1.765
18	4	1	....	...	1.600
13.75	3.75	2	5	...	2.245
13.5	4	3	....	...	1.865
9	3.5	..	....	...	1.180
6	4	2	....	5	1.105
6	4	3	....	6	1.350
1.5	4	1	....	8.5	0.960

Tool steel producers include; A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

Birmingham District	Basic	No. 2 Foundry	Malle-able	Besse-mer
AlabamaCity,Ala. R2	54.50	55.00‡	....	....
Birmingham R2	54.50	55.00‡	....	....
Birmingham U6	....	55.00‡	59.00†	....
Woodward,Ala. W15	54.50	55.00‡	59.00	....
Cincinnati, deld.	....	62.70	....	....
Buffalo District				
Buffalo H1, R2	58.50	59.00	59.50	60.00
Tonawanda,N.Y. W12	58.50	59.00	59.50	60.00
N.Tonawanda,N.Y. T9	....	59.00	59.50	60.00
Boston, deld.	69.15	69.65	70.15	....
Rochester,N.Y. deld.	61.52	62.02	62.52	....
Syracuse,N.Y. deld.	62.62	63.12	63.62	....
Chicago District				
Chicago I-3	58.50	59.00	59.00	59.50
Chicago R2	58.50	....	59.00	....
Gary,Ind. U5	58.50	....	59.00	....
S.Chicago,Ill. Y1	58.50	59.00	59.00	59.50
S.Chicago,Ill. U5, W14	58.50	....	59.00	59.50
Milwaukee, deld.	60.67	61.17	61.17	61.67
Muskegon,Mich., deld.	....	65.30	65.30	....
Cleveland District				
Cleveland A7, R2	58.50	59.00	59.00	59.50
Akron,O., deld.	61.25	61.75	61.75	62.25
Lorain,O. N3	58.50	....	....	59.50
Mid-Atlantic District				
Bethlehem,Pa. B2	60.50	61.00	61.50	62.00
NewYork, deld.	....	64.78	65.28	....
Newark, deld.	63.52	64.02	64.52	65.02
Birdsboro,Pa. B10	60.50	61.00	61.50	62.00
Chester,Pa. C31	54.50	55.00	55.50	....
Philadelphia, deld.	56.16	56.66	57.16	....
Steelton,Pa. B2	60.50	61.00	61.50	62.00
Swedeland,Pa. A3	60.50	61.00	61.50	62.00
Philadelphia, deld.	62.16	62.66	63.16	63.66
Troy,N.Y. R2	60.50	61.00	61.50	62.00
Pittsburgh District				
Neville Island,Pa. P6	58.50	59.00	59.00	....
Pittsburgh (N&S sides), Aliquippa, deld.	....	60.37	60.37	60.87
McKeesRocks, deld.	....	60.04	60.04	60.54
Lawrenceville Homestead, Wilmerding,Monaca, deld.	....	60.66	60.66	61.16
Verona, Trafford, deld.	60.69	61.19	61.19	61.69
Brackenridge, deld.	60.95	61.45	61.45	61.95
Bessemer,Pa. U5	58.50	....	59.00	59.50
Clairton,Rankin,S.Duquesne,Pa. U5	58.50	....	....	....
McKeesport,Pa. N3	58.50	....	....	59.50
Midland,Pa. C18	58.50	....	....	....

Youngstown District	Basic	No. 2 Foundry	Malle-able	Besse-mer
Hubbard,O. Y1	....	....	59.00	....
Sharpsville,Pa. S6	58.50	....	59.00	59.50
Youngstown Y1	....	....	59.00	59.50
Youngstown U5	58.50	....	....	59.50
Mansfield,O., deld.	63.40	....	63.90	64.40
Duluth I-3	58.50	59.00	59.00	59.50
Erie,Pa. I-3	58.50	59.00	59.00	59.50
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	64.50	65.00	....	....
Geneva,Utah C11	58.50	59.00	....	....
GraniteCity Ill. G4	60.40	60.90	61.40	....
Ironton,Utah C11	58.50	59.00	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	60.50	61.00	61.50	....
Rockwood,Tenn. T3	....	55.00‡	59.00	....
Toledo,O. I-3	58.50	59.00	59.00	59.50
Cincinnati, deld.	64.26	64.76	....	....

*Low phos, southern grade.
†Phos., 0.30 max.
‡Intermediate (Phos. 0.31-0.69%), $56.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.05% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson,O. G2, J1	$67.50
Buffalo H1	68.75

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.50 Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, (Open-hearth & Fdry, freight allowed K2)	87.50
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	90.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035 max.)	$72.50
Steelton,Pa. B2 (Phos. 0.035 max.)	66.50
Philadelphia, deld.	70.05
Troy,N.Y. R2 (Phos. 0.035 max.)	66.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075 max.)	63.50
Duluth I-3 (Intermediate) Phos. 0.036-0.075 max.)	63.50
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075 max.)	63.50

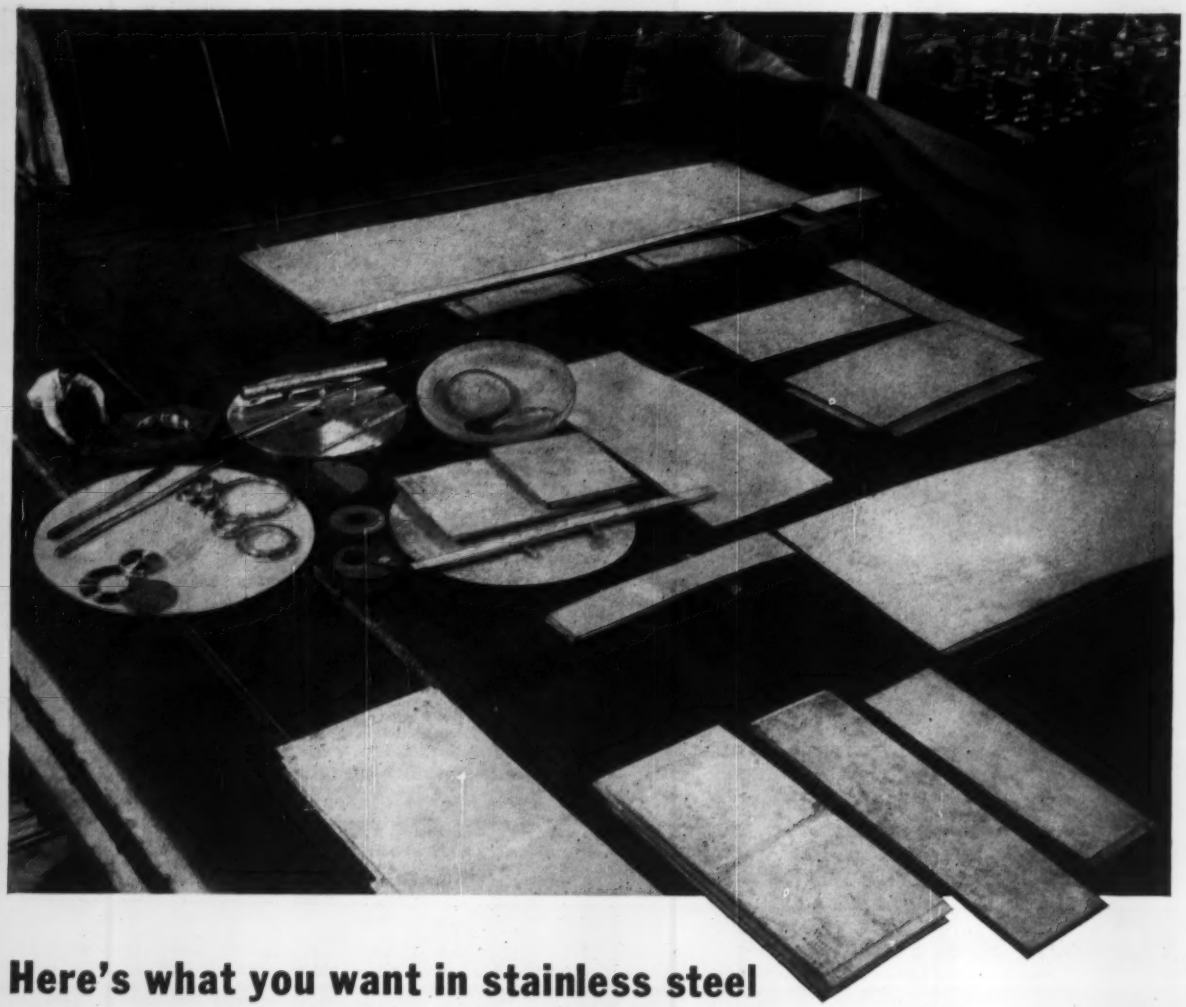
Warehouse Steel Products

Representative prices, cents per pound subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Buffalo, Cleveland, Erie, 30 cents; Chicago, Milwaukee, St. Louis, St. Paul, Detroit, Cincinnati, Pittsburgh, 25 cents; Philadelphia, New York, Baltimore, Boston, San Francisco, Los Angeles, and Portland, Oreg., 10 cents; Atlanta, Houston, Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[3]	Shapes	Carbon	Floor
Atlanta	7.14	8.20	8.87	....	7.40	....	7.42	9.39	....	7.63	7.49	9.48
Baltimore	7.03	8.32	9.10	....	7.65	....	7.61	8.62[8]	13.44	7.93	7.21	8.87
Birmingham	6.70	7.80	8.85	....	6.95	....	7.00	9.35	....	7.20	7.05	9.10
Boston	7.70	8.81	10.27	45.67	7.96	....	7.83	9.53	14.45	8.13	7.89	9.36
Buffalo	6.80	8.05	9.77	....	7.15	....	7.10	7.90	13.10	7.40	7.15	8.70
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	....	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.80	7.93	8.50	46.55	7.06	....	7.08	7.75	12.85	7.28	6.99	8.46
Cincinnati	6.92	7.92	8.90	46.10	7.30	....	7.32	8.05	13.09	7.75	7.28	8.71
Cleveland	6.80	7.93	8.85	....	7.16	....	7.14	7.85	12.91	7.61	7.16	8.63
Detroit	6.99	8.12	8.78	43.50	7.34	....	7.36	8.04	13.05	7.75	7.27	8.65
Erie, Pa.	6.80	7.90	8.85	....	7.15	....	7.08	7.85	....	7.40	7.15	8.63
Houston	7.85	8.75	10.49	....	8.15	....	8.25	9.85	14.00	8.20	7.80	9.20
Los Angeles	8.05	10.00	11.00	....	8.35	....	8.05	11.25	14.25	8.30	8.05	10.25
Milwaukee	6.89	8.02	8.59	....	7.15	....	7.17	7.94	12.94	7.45	7.08	8.55
Moline, Ill.	7.15	8.28	8.85	....	7.41	....	7.43	8.10	....	7.63	7.34	....
New York	7.46	8.68	9.44	44.95	8.07	....	7.96	9.48	13.28	7.99	7.76	9.19
Norfolk, Va.	7.25	....	....	....	7.65	....	7.65	9.50	....	7.95	7.45	8.95
Philadelphia	7.14	8.42	9.35	45.98	7.67	9.02	7.64	8.46	13.16	7.74	7.37	8.69**
Pittsburgh	6.80	7.93	9.20	48.67	7.16	....	7.08	7.85	12.85	7.28	6.99	8.46
Portland, Oreg.	7.80	8.80	10.65	....	8.00	....	7.95	11.80	15.00	7.85	7.75	9.60
Richmond, Va.	7.00	....	9.47	....	7.65	....	7.70	8.85	....	7.95	7.20	9.10
St. Louis	7.09	8.22	9.19	43.89	7.35	....	7.37	8.14	13.14	7.68	7.28	8.75
St. Paul	7.46	8.59	9.16	....	7.72	....	7.74	8.51	13.51	7.94	7.65	9.12
San Francisco	8.10	9.65	10.15	51.65	8.35	....	8.05	11.20	14.25[3]	8.25	8.05	10.25
Seattle	8.55	10.40	10.80	54.00	8.65	....	8.35	11.70	14.60	8.30	8.20	10.10
Spokane	8.55	11.00[7]	10.80	....	9.05	....	8.35	11.80	15.35	8.30	8.20	10.60
Washington	7.50	8.79	7.97	....	8.12	....	8.08	9.99	....	8.40	7.68	9.34

Prices do not include gage extras; †prices include gage and coating extras (based on 12.50-cent zinc), except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **¼-in. and heavier; ††as annealed; ‡‡under ⅛-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York and Boston, 10 000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; [2]—500 to 9999 lb; [3]—400 to 999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 to 3999 lb; [8]—2000 to 3999 lb; [9]—f.o.b. local delivery in lots of 10 000 lb and over.



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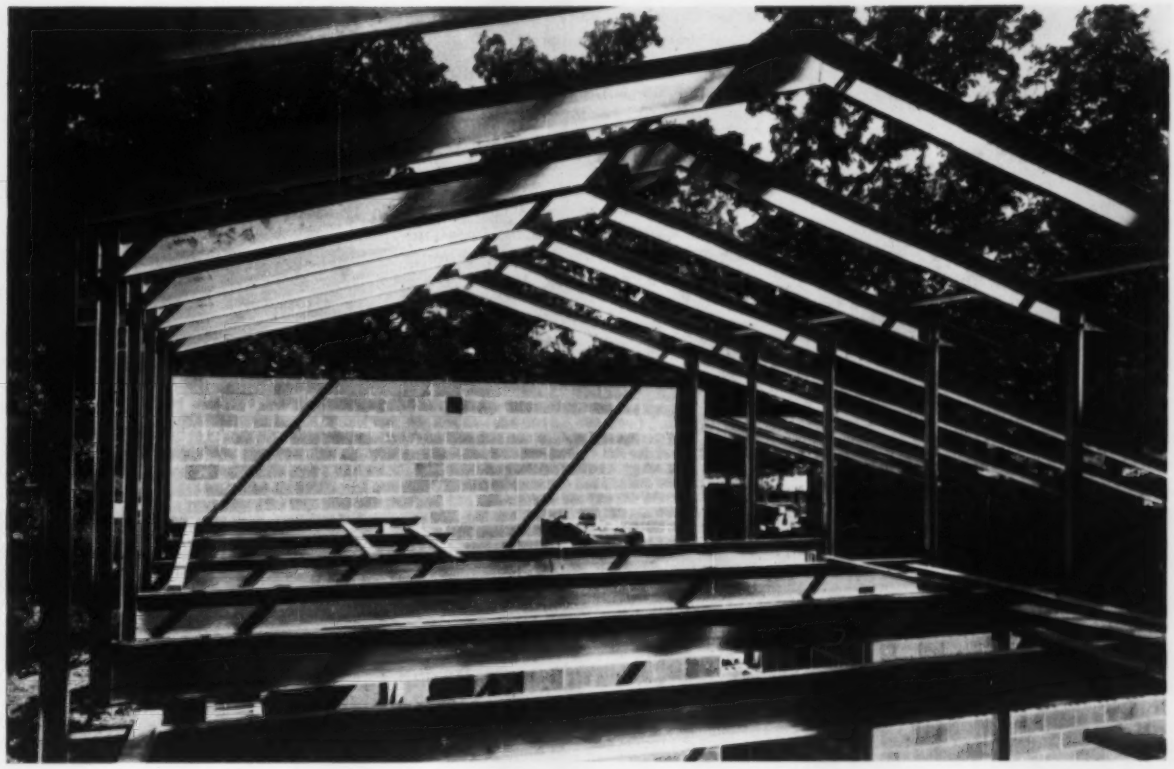

Jones & Laughlin Junior Beams are used as floor joists and roof rafters in this experimental house at Research Village near Chicago. A new trend in mass homebuilding may develop

Homebuilders Take a Look at Structurals

THE HOUSE ABOVE is only an experiment, but it could open the door to a big new market for light structural shapes.

Using Jones & Laughlin Steel Corp.'s Junior Beams in all floor and roof areas, the house is part of U. S. Gypsum's Research Village near Chicago. It employs over 5831 lb of Junior Beams: 12-in. sections for floor joists, 4 x 4-in. light columns and 10-in. beams for roof rafters.

New Wrinkle—This is not the first use of light structurals in homebuilding. J & L designed Junior Beams in 1926 for floor and roof joists. Many homes used them in floors, but because of their strength and light weight, they also went into schools, apartment houses, hospitals and light-occupancy office buildings. The new adaptation uses rigid bents welded onto metal-edged planks in the frame of the house. J & L believes homes in the $16,000-to-$18,000 class are ready for steel construction. Two obvious gains: No termite problem, no sagging roofs.

"In general," the architects of the house say, "steel provides the long spans required in floor construction . . . without excessive weight and apparent mass of the other materials which might have been selected." The beams and columns were fabricated in a job shop. Connections were made with temporary bolts until bents were field welded into rigid frames. "This experience convinced the general contractor that a better job and a handsome saving could be effected by complete shop welding of the entire rigid frame," designers add.

Multiple Savings — Thinking in terms of the multiple-unit project, experimenters believe the basic structure, including floors and decking, can be erected in one working day. This could offset the higher initial cost of materials.

Junior Beams save space, both in wall and ceiling construction. Since there are no furred ceilings, the height of the building can be reduced without loss of space or headroom. Structural steel is fire resistant and reduces the maintenance requirements of exterior and interior members. Because they are rolled from copper-bearing steel, the beams are highly resistant to corrosion.

Aside from economies, light structurals appeal to the homeowner's eye. Exposed roof beams blend in with the modernistic architecture of the house.

If the design lives up to expectations, it may mean a boost in the market for light structurals. At about 3 tons per house, this could be considerable

Structural Shapes . . .

Structural Shape Prices, Page 98

Premium-priced structural steel has appeared in the East, reflecting a tightening in supply. At several eastern points, shops have lost ground due to strikes. With plain material costs higher, many smaller shops are having difficulty in meeting the basic wage increase.

Most shops in the New England area realized they booked a substantial tonnage at firm prices that

Don't junk your old boring mill just because it has grown wobbly and loose. Now is the time to have your outdated machine tools returned to their original performance levels through Simmons Engineered Rebuilding—at half the cost of new equipment

Engineered Rebuilding by Simmons *unconditionally guarantees* that your machine tools will equal or exceed manufacturers' original specifications.

And, through modernization, Simmons is adapting old machines to high-speed, high-precision production that was unheard of when the tools were new.

Today: look into the important economies in production, maintenance, and liberal tax allowances available when you turn the old machines in your plant into precision equipment for today's production!

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were too low, even before the $7 advance in plain material.

Fabricating shops are putting heavy pressure on mills for tonnages of plain material to cover commitments. The leading eastern producer is five to six weeks behind on standard structurals, about ten weeks on wide flange. Production at a Pittsburgh mill is being curtailed by construction work, causing the shortage to grow more acute in the territory served. There is little fourth-quarter relief in store for fabricators.

Bridge inquiry is increasing. Initial bids on the delayed Connecticut program, taking 170,000 tons, are expected to be opened next month. This work will be placed with larger individual tonnages per contract than had been forecast earlier.

Bridge estimating is bolstered also by 8650 tons for New York state work which will close Aug. 25. Included in this job are several large plate girders for the eastern branch of the New York thruway.

Heavy construction of bridges and superhighways is not the only cause for the rush for structural shapes. There are increasing applications in building of trailers and houses. The lightweight shapes figure prominently in both applications.

Wire . . .

Wire Prices, Pages 100 & 101

Deliveries are being extended further on more grades of wire rods and finished wire products. Demand is heavy and has reached the point where inquiries in most instances are referred directly to the mills for acceptance. Tonnages called for in original inquiries frequently are cut back, notably on rods.

Two eastern producers are rehabilitating rod production facilities to increase capacity. They are losing ton-

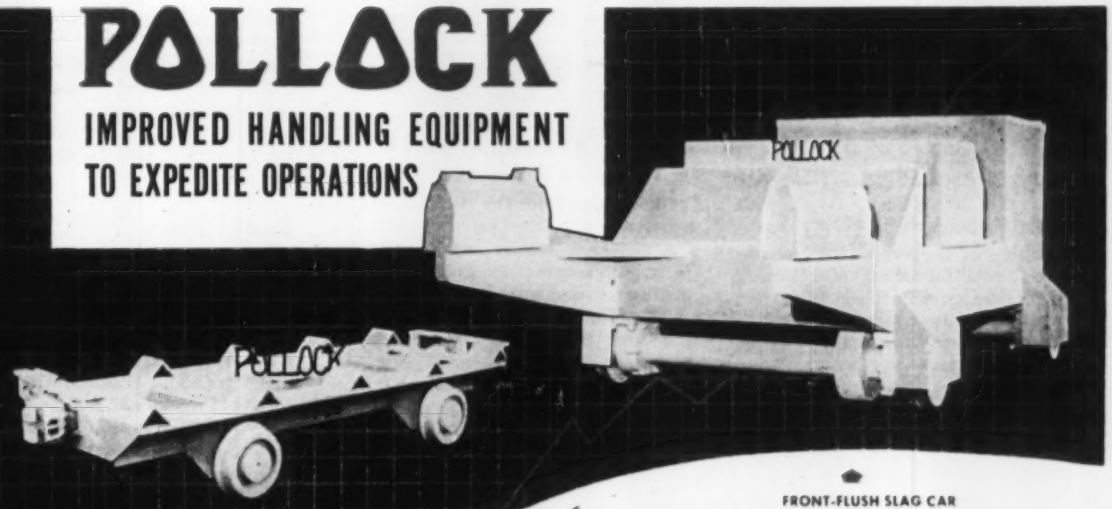
Steel Shipments During First Six Months of 1955

(Net Tons)

	1st 6 Mo. 1955				1st 6 Mo., 1954
	Carbon	Alloy	Stainless	Total	Total
Semifinished					
Ingots	178,604	85,539	14,513	278,656	181,753
Blooms, slabs, etc.	1,132,034	265,326	8,979	1,406,339	759,132
Skelp	85,427	.....	.....	85,427	58,840
Wire rods	560,907	12,049	4,399	577,355	385,091
Total	1,956,972	362,914	27,891	2,347,777	1,384,816
Finished					
Rails—standard	650,780	1	.....	650,781	787,851
Rails—other	37,308	1	.....	37,309	46,964
Joint bars	34,545	.....	.....	34,545	47,727
Tie plates	168,642	.....	.....	168,642	164,237
Track spikes	50,310	.....	.....	50,310	44,754
Wheels	144,283	784	.....	145,067	110,027
Axles	53,707	33	.....	53,740	32,566
Total	1,139,575	819	.....	1,140,394	1,234,126
Bars—hot rolled	3,217,684	1,070,487	21,962	4,310,133	3,168,890
Bars—reinforcing	1,013,619	.....	.....	1,013,619	867,375
Bars—cold drawn	756,086	145,417	26,652	928,155	615,985
Tool steel	8,018	49,123	.....	57,141	44,913
Total	4,995,407	1,265,027	48,614	6,309,048	4,697,163
Standard pipe	1,431,248	448	2	1,431,698	1,120,332
Oil country goods	1,032,256	206,306	.....	1,238,562	1,230,187
Line pipe	1,375,277	.....	.....	1,375,277	1,499,801
Mech. tubing	346,981	119,708	2,481	469,170	359,440
Pressure tubing	109,689	13,875	7,247	130,811	148,776
Total	4,295,451	340,337	9,730	4,645,518	4,358,536
Wire—drawn	1,565,397	23,325	16,111	1,604,833	1,191,089
Nails & staples	360,413	.....	1	360,414	287,880
Barbed wire	85,336	.....	.....	85,336	87,832
Woven fence	210,101	.....	1	210,102	190,327
Bale ties	37,260	.....	.....	37,260	29,971
Total	2,258,507	23,325	16,113	2,297,945	1,787,099
Black plate	413,766	.....	.....	413,766	361,114
Tin plate—HD	611,171	.....	.....	611,171	746,834
Tin plate—electro	2,546,027	.....	.....	2,546,027	2,273,319
Total	3,570,964	.....	.....	3,570,964	3,381,267
Sheets—hot rolled	4,480,791	174,168	19,812	4,674,711	3,024,777
Sheets—cold rolled	7,362,974	26,596	66,612	7,456,182	4,800,215
Sheets—galvanized	1,370,396	665	.....	1,371,061	1,121,156
Sheets—other coated	131,461	.....	.....	131,461	86,537
Sheets—enameling	105,717	.....	.....	105,717	86,897
Elec. sheet & strip	71,347	317,969	.....	389,316	312,154
Strip—hot rolled	1,051,439	14,219	2,518	1,068,176	739,825
Strip—cold rolled	715,845	7,680	134,646	857,571	647,257
Total	15,289,970	540,637	223,588	16,054,195	10,818,818
Shapes—heavy	2,251,953	19,118	48	2,271,119	2,456,980
Steel piling	182,542	.....	.....	182,542	198,845
Plates	3,031,498	128,216	10,943	3,170,657	2,956,880
TOTAL SHIPMENTS	38,972,839	2,680,393	336,927	41,990,159	33,274,530

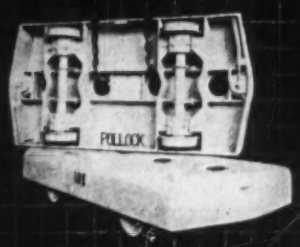
POLLOCK

IMPROVED HANDLING EQUIPMENT TO EXPEDITE OPERATIONS

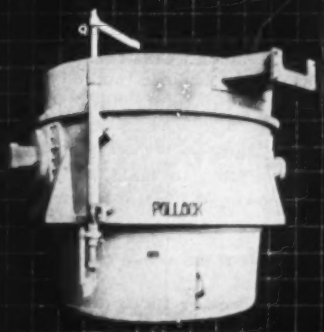


FRONT-FLUSH SLAG CAR

CHARGING BOX CAR



INGOT CAR



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DRAG-OUT SLAG CAR

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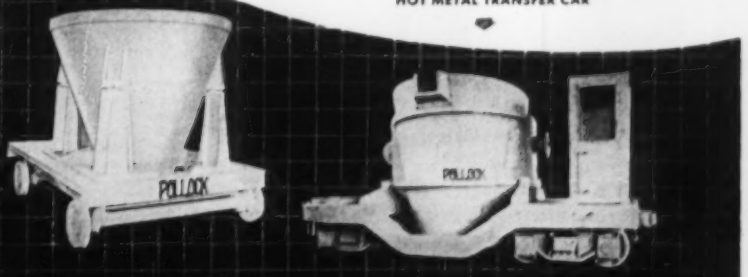

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BLAST FURNACES - HOT METAL CARS AND LADLES - CINDER AND SLAG CARS - INGOT MOULD CARS - CHARGING BOX CARS - WELDED OPEN HEARTH LADLES

nage. Openings on fourth-quarter rolling schedules allow for only small additional tonnage. Rod supply from October forward is expected to cause a further tightening in finished wire products. Manufacturers' grades are booked through September and are being ordered for delivery beyond that month more frequently, including cold heading.

Shortage of copper, where end use of steel is a factor, is also setting back production schedules.

Consumers' inventories of wire generally are light. Consumption has exceeded estimates, notably numerous types of springs.

Steel Output Remains High

Production of steel in July was 9,110,000 net tons of ingots and steel for castings, the second highest total for that month on record, comparison: 9,275,673 tons in July, 1953; 6,627,597 tons in July of last year.

Production for the first seven months of this year was 66,316,302 tons and has been exceeded by only one other comparable period. Output in the 1953 period was 67.2 million tons; in 1954, 50,759,229 tons.

In July, the index of steel production (1947-49 = 100) was 128.1, compared with a revised figure of 141.6 in June, when the steelmaking furnaces poured 9,746,467 tons. The index for the first seven months of this year was 136.3, compared with 104.3 in the same months last year.

The July production was 85.4 per cent of the Jan. 1, 1955, capacity. Output for the first seven months was 90.7 per cent.

Detailed data are given in the accompanying table.

Semifinished Steel . . .

Semifinished Prices, Page 98

Steelmakers in the Chicago area are viewing production prospects for the next few weeks more optimistically. Reasons: Progress in completing equipment repairs, milder weather and tapering vacations. For the first time in ten weeks, ingot output in the week ended Aug. 14 exceeded scheduled operations. The margin was small, but it may be a turning point.

Demand for semifinished steel on the West Coast is stronger this month than in July. Inquiries received by producers indicate they will be booked solidly for the remainder of the year. A few products already are sold out for the rest of this year.

Tubular Goods . . .

Tubular Goods Prices, Page 102

Most welded and seamless products remain in tight supply. They will continue to be in strong demand through the third quarter. Fourth-quarter order books are generally open. Oil country orders for that period came in immediately in large volume, as requirements for that product show no signs of diminishing.

The supply situation in the Pittsburgh district was adversely affected early this month by vacations at the area's largest pipe mill.

New England distributors are maintaining a good balance between supply of and demand for tubular goods, with the exception of 5 to 12 in. seamless pipe. Contract for 1500 tons for rebuilding Peir 11, Boston, is outstanding.

Steel Bars . . .

Bar Prices, Page 98

Consumption of carbon bars holds at a high level. This has prevented most users from accumulating stocks.

Hot-rolled carbon material has been under informal allocation in the East for some weeks and will be under further restrictions for what capacity is left for the fourth quarter. Some schedules are filled, while others have barely four weeks of production to parcel out sparingly. Bolt shops, forging producers and screw machine products are pressing for additional fourth-quarter tonnage as shipments against old orders are lagging. Bar mills must compete for a share of the available semifinished steel.

A gradual decline in new orders, caused by summer slowdowns at fabricating plants and model changeovers in appliance and automotive industries, is practically unnoticed by producers in the Pittsburgh district. They complain that hot weather and vacation schedules make it impossible to fill total third-quarter demand.

Cold-finishers are hampered in their efforts to build up a backlog by slower deliveries from the hot

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	OPEN HEARTH ‡Index	BESSEMER Net tons	BESSEMER Per cent of capacity	BESSEMER ‡Index	ELECTRIC Net tons	ELECTRIC Per cent of capacity	ELECTRIC ‡Index	TOTAL Net tons	TOTAL Per cent of capacity	TOTAL ‡Index	Calculated weekly production (Net tons)	Number of weeks in month
1955														
January	8,054,345	86.0	125.7	199,229	49.0	56.7	584,162	63.6	163.6	8,837,736	82.7	124.2	1,994,974	4.43
February	7,734,884	91.5	133.7	197,091	53.7	62.1	564,959	68.1	175.1	8,496,934	88.0	132.2	2,124,233	4.00
March	9,060,026	96.7	141.4	256,493	62.8	72.7	666,235	72.6	186.5	9,981,754	93.4	140.3	2,253,281	4.43
1st Quarter	24,849,255	91.4	133.6	651,813	55.2	63.9	1,815,356	68.1	175.1	27,316,424	88.0	132.3	2,124,139	12.86
April	8,858,549	97.7	142.9	275,069	69.8	80.9	681,477	76.6	197.2	9,815,095	94.8	142.6	2,287,901	4.29
May	9,307,291	99.4	145.3	305,347	75.1	86.9	715,678	77.9	200.4	10,328,316	96.6	145.2	2,331,448	4.43
*June	8,762,755	96.6	141.4	283,544	72.0	83.4	700,168	78.7	202.6	9,746,467	94.1	141.6	2,271,904	4.29
*2nd Quarter	26,928,595	97.9	143.2	863,960	72.3	83.8	2,097,323	77.8	200.0	29,889,878	95.2	143.1	2,297,454	13.01
*1st 6 Months	51,777,850	94.7	138.4	1,515,773	63.8	73.9	3,912,679	73.0	187.6	57,206,302	91.6	137.7	2,211,299	25.87
†July	8,240,000	88.2	128.6	268,000	66.0	76.3	602,000	65.7	168.5	9,110,000	85.4	128.1	2,061,000	4.42
1954														
January	7,266,526	78.3	113.3	260,453	64.0	74.1	434,507	45.9	121.7	7,961,486	75.3	111.8	1,794,918	4.43
February	6,523,213	77.9	112.8	174,253	47.4	54.9	385,771	46.1	119.6	7,083,237	74.3	110.2	1,770,809	4.00
March	6,649,667	71.7	103.8	207,726	51.1	59.1	432,207	48.7	121.0	7,289,600	69.0	102.5	1,645,508	4.43
1st Quarter	20,429,406	75.9	109.9	642,432	54.4	63.0	1,252,485	48.6	120.8	22,324,323	72.8	108.1	1,735,960	12.86
April	6,365,326	70.9	102.7	162,657	41.3	47.8	442,954	51.5	128.2	6,970,937	68.1	101.3	1,624,927	4.29
May	6,817,951	73.6	106.4	198,063	48.7	56.4	456,724	51.4	127.9	7,472,738	70.7	105.0	1,686,848	4.43
June	6,702,006	74.7	108.1	207,666	52.7	61.1	453,963	52.8	131.3	7,363,634	72.0	107.0	1,716,465	4.29
2nd Quarter	19,885,283	73.1	105.8	568,386	47.6	55.1	1,353,640	51.9	129.1	21,807,309	70.3	104.4	1,676,196	13.01
1st Half	40,314,689	74.5	107.8	1,210,818	51.0	59.0	2,606,125	50.3	125.0	44,131,632	71.5	106.2	1,705,900	25.87
July	6,040,120	65.3	94.3	205,313	50.6	58.4	382,164	43.1	107.0	6,627,597	62.9	93.2	1,499,456	4.43
August	6,021,496	65.0	94.0	217,837	53.6	62.0	427,574	48.2	119.7	6,666,907	63.1	93.7	1,504,945	4.43
September	6,140,266	68.6	99.1	214,065	54.5	63.6	453,152	52.8	131.1	6,807,483	66.7	98.9	1,590,533	4.28
3rd Quarter	18,201,882	66.3	95.8	637,215	52.9	61.1	1,262,890	48.0	119.1	20,101,987	64.2	95.2	1,530,997	13.13
9 Months	58,516,571	71.7	103.7	1,848,033	51.6	59.7	3,869,015	49.5	123.0	64,233,619	69.1	102.5	1,647,016	39.00
October	6,973,568	75.2	108.9	237,754	58.5	67.7	490,211	55.2	137.3	7,701,533	72.9	108.3	1,738,495	4.43
November	7,307,151	81.4	117.9	231,191	58.7	68.0	551,065	64.1	159.4	8,089,427	79.1	117.5	1,885,647	4.29
December	7,530,204	81.4	117.6	231,126	57.0	65.8	525,743	59.4	147.2	8,287,073	78.6	116.5	1,874,903	4.42
4th Quarter	21,810,923	79.3	114.7	700,071	58.0	67.1	1,567,039	59.5	147.8	24,078,033	76.8	114.0	1,832,423	13.14
2nd Half	40,012,805	72.8	105.2	1,337,286	55.4	64.1	2,829,929	53.8	133.5	44,180,020	70.5	104.6	1,681,767	26.27
Total	80,327,494	73.6	106.5	2,548,104	53.2	61.6	5,436,054	52.0	129.3	88,311,652	71.0	105.4	1,693,741	52.14

Note—The percentages of capacity operated are calculated on weekly capacities in 1955 of 2,114,196 net tons hearth, 91,810 net tons bessemer and 207,272 net tons electric ingots and steel for castings, total 2,413,278 net tons; based on annual capacities as of Jan. 1, 1955, as follows: Open hearth 110,234,160 net tons, bessemer 4,787,000 net tons, electric 10,807,150 net tons, total 125,828,310 net tons.

Note—The percentages of capacity operated are calculated on weekly capacities in 1954 of 2,092,342 net tons open hearth, 91,810 net tons bessemer and 200,397 net tons electric ingots and steel for castings, total 2,384,549 net tons; based on annual capacities as of Jan. 1, 1954, as follows: Open hearth 109,094,730 net tons, bessemer 4,787,000 net tons, electric 10,448,680 net tons, total 124,330,410 net tons.

*Revised. †Preliminary figures, subject to revision. ‡Index of production based on average weekly production of the three years 1947-1948-1949.

mills. They say deliveries are more than a month behind schedule despite continuous pressure for delinquent tonnage.

Alloys are not extended. Capacity is open for the final quarter. Deliveries are close to schedule.

Prices Increased on Rolls

Casting and machining prices on iron and steel rolls were increased 10 per cent, effective Aug. 15, by the Blaw-Knox Co., Pittsburgh. All orders booked on and after that date are on an f.o.b. plant basis.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 99 & 100

Lack of cancellations of sheet orders by automotive and appliance producers during the period of preparing for model change-overs causes producers to be optimistic in planning fourth-quarter production. Some are drawing their plans based on expectations of 100 per cent output in the final quarter.

Sales executives point out that no decline in general industrial activity is likely in the final months of 1955. At the same time, automakers should require sheet tonnage earlier this year than last, as model change-over will be completed more quickly. Not known is whether consumers' inventories will be large enough to enable them to remain out of the market for several fall months. However, producers are planning fourth-quarter production schedules in anticipation of capacity operations.

In the East, sheet users are getting less tonnage accepted for fourth-quarter. Roughly, producers are curtailing orders about 20 to 25 per cent, based on volume booked in the first nine months. While some consumers of flat-rolled steel are asking for excessive tonnage, including some duplicate tonnage, the fact remains that most of them have not accumlated an excessive inventory; some have lost ground in maintaining steel stocks.

Producers in the Midwest feel sure that cold-rolled sheets are not being consumed at the rate tonnage is being shipped, yet there is no direct evidence of this. There are no cancellations nor delivery setbacks.

Galvanized sheets are fully sold out for the balance of the year. Recently, there has been a pickup in demand for electrical sheets. The latter comes mainly from small motor manufacturers.

Inland Steel Container Co., division of Inland Steel Co., on Aug. 10 reduced prices 2 per cent on 5-gal steel pails. The company had increased prices July 17, following a rise in the price of sheet steel. The reduction was made to meet competitive conditions.

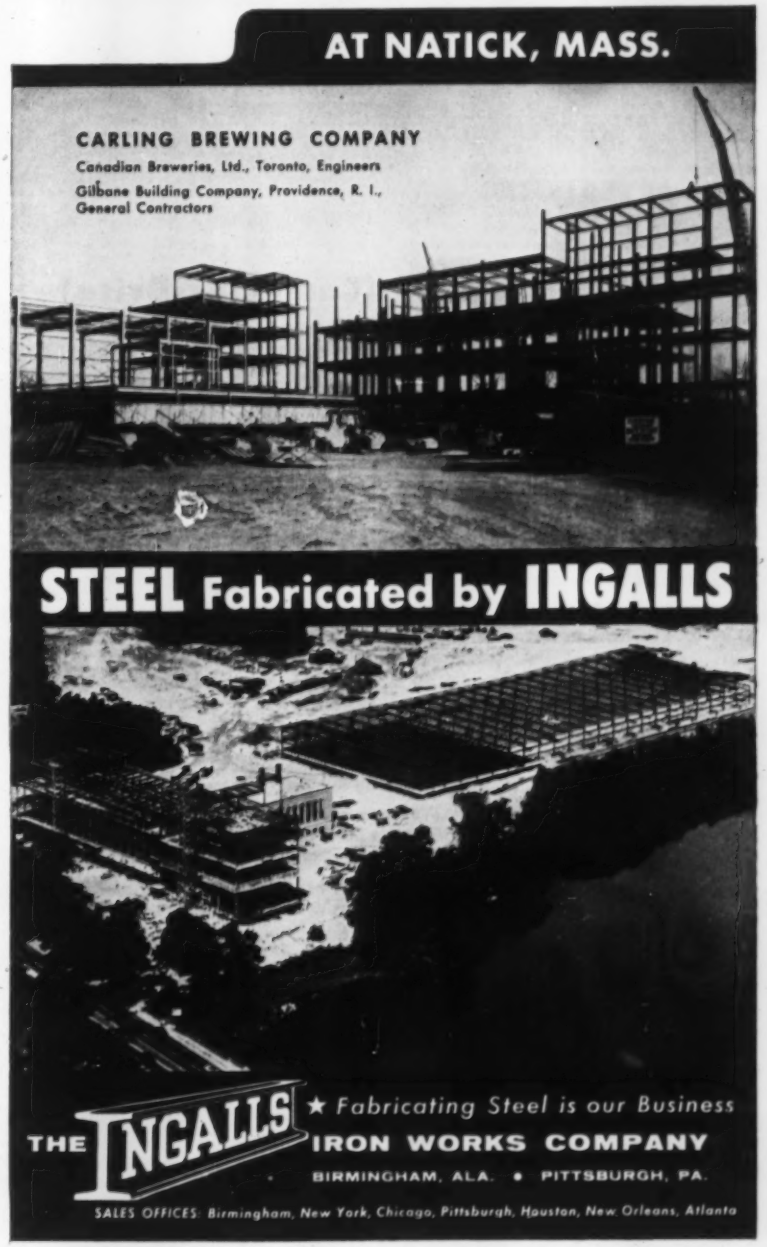
Plates . . .

Plate Prices, Page 98

Demand for steel plates continues extremely heavy and is unsatisfied by a wide margin. Practically every plate user is suffering from slow mill deliveries and ragged inventories, conditions that appear unlikely to change for the better any time soon.

The pressure which gets most publicity is that for new freight cars and repairs to old ones. Because this demand came into the picture late, platemakers have been unable to accommodate it fully. Heavier railroad car building could have come at no worse time from the plate producers' viewpoint. This tonnage is superimposed on loaded books and accompanies mounting demand from other heavy industries, including shipbuilding, machinery, weldments, large tank and large-diameter fabricated pipe.

Structural shops with plate girder work are not fully covered on plate required and are experiencing diffi-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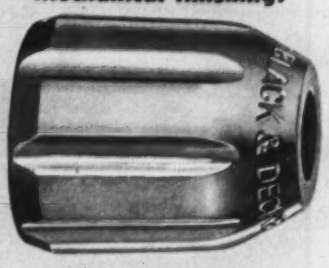

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culty in placing tonnage. Nevertheless, with some July-August orders not likely to be shipped before September-October, most plate mills tend to book additional volume sparingly. Obviously, there is not enough semifinished or open rolling mill capacity available to book all plate tonnage wanted.

Open-hearth production lost during a flash flood at Coatesville, Pa., recently was small. The leading plate mill there is striving to keep schedules in hand, booking little November-December volume.

Pig Iron . . .

Pig Iron Prices, Page 103

Consumption of pig iron in the Midwest is threatened by strikes in manufacturing plants. The Beloit, Wis., plant of Fairbanks, Morse & Co. is strikebound. In the farm equipment industry, strikes have been voted against Allis-Chalmers Mfg. Co. and International Harvester Co. to become effective if contract negotiations now under way stalemate.

Demand for iron has been surprisingly good despite widespread foundry closings for vacations. The outlook for September is even brighter

Pig iron shipments in the New York area in August will be heavier than they were in July. The foundry melt is gradually gaining as vacation suspensions end. The decline in iron shipments in the summer months, June through August, was not so sharp as last year's. In some cases, volume was almost 30 per cent higher. Most consumers have low inventories, and any substantial improvement in demand for castings should be quickly followed by a set-up in iron requirements.

Warehouse . . .

Warehouse Prices, Page 103

Demand for warehouse steel continues lively in all products and is pretty well confined to the normal warehouse class of buyers, with certain exceptions—plates, structurals and cold-rolled sheets. They are in tight supply and not available in sufficient tonnages from mills. On some items, such as cold-finished bars, distributors would welcome heavier demand.

Business booked by distributors in the Philadelphia district is restricted by their unbalanced inventories. August dollar sales will approximate those of July, but would surpass the July total if steel were available.

Shipments to warehouses are behind schedule, but in most instances

Current Ferroalloy Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.

(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max, 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37 f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered, Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. S M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carloads, packed S M x D, 18.35c per lb of alloy, ton lot 19.2c; less ton lot, 20.4c, delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon, F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grades, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max) $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.5c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2¼ lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.80-$6.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb plus Ta 60% min, C 0.30% max.) Ton lots, 2" x D, $4.65 per lb of contained Cb plus Ta, deld.; less ton lots $4.70.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5.7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal, Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn. $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity $1.46.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington, Pa., $1.24.

Ores

Lake Superior Iron Ore

(Prices effective for the 1955 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-66%	20.00
N. African hematite (spot)	nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign, wolframite, good commercial quality	$33.50
Domestic, scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 95c-$1.05 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $45.00-$50.00
48% 3:1	42.00-44.00
48% no ratio	34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	32.00

Domestic

Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

56-60%	$3.50-$3.75
60-65%	3.75-3.90

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $122; Salina, Pa., $127; Niles, O., $133.

Super-Duty: St. Louis, $150.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., Hawston, Pa., $128; Warren, Niles, O., Hays, Pa., $133; Morrisville, Pa., $131.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $138; Lehigh, Utah, $144; Los Angeles, $151.

Super Duty: Hays, Sproul, Hawston, Pa., Warren, Windham, O., Athens, Tex., $145; Morrisville, Pa., Niles, O., $148; Joliet, Ill., $151; Curtner, Calif., $163.

Semisilica Brick (per 1000)

Clearfield, Pa., $139; Philadelphia, $125; Woodbridge, N. J., $122.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.60.

Ladle Brick (per 1000)

Dry Pressed: Aisey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $88.50; Wellsville, O., $92.50; Clearfield, Pa., Portsmouth, O., $98.

High-Alumina Brick (per 1000)

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $194; Danville, Ill., $197.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $241; Danville, Ill., $244.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $279; Danville, Ill., $281; Clearfield, Pa., $286.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $157; Clearfield, Pa., $158.50; St. Louis, $169.30.

Nozzles (per 1000)

Reesdale, Pa., $253.70; Johnstown, Pa., $259.20; Clearfield, Pa., $259.40; St. Louis, $259.45; Bridgeburg, Pa., $286.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $196; Clearfield, Pa., $198; St. Louis, $195.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, O., Gibsonburg, Nario, O., $15; Thornton, McCook, Ill., $15.60; Dolly Siding, Bonne Terre, Mo., $14.

Magnesite (per net ton)

Domestic, dead-burned, bulk, ¼-in. grains with fines: Chewelah, Wash., $40; Luning, Nev., $40. ⅝-in. grains with fines: Baltimore, $66.40.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.25-$14.00
Connellsville, foundry	16.00-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$25.50
Camden, N. J., ovens	25.00
Everett, Mass., ovens	
New England, deld.	*$27.05
Chicago, ovens	25.75
Chicago, deld.	27.25
Terre Haute, Ind., ovens	25.50
Milwaukee, ovens	26.25
Indianapolis, ovens	25.50
Cincinnati, deld.	27.10
Painesville, O., ovens	26.25
Cleveland, deld.	28.18
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	25.00
Swedeland, Pa., ovens	25.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	25.00
Detroit, ovens	26.25
Detroit, deld.	27.25
Pontiac, deld.	27.81
Saginaw, deld.	29.33

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Ammonium sulphate	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol: Grade 1, 14.00; Grade 2-3, 13.50; Grade 4, 15.50; Grade 5, 14.25

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $38-$39; 70%, $35-$36; 60%, $31-$32. Imported, net tons, duty paid, metallurgical grade: European, $31-$33; Mexican, $35.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE

Diam (Inches)	Length (Inches)	Per 100 lb
2	24	$47.75
2½	30	30.75
3	40	30.00
4	40	28.50
5¼	40	28.25
6	60	25.50
7	60	25.25
8, 9, 10	60	22.75
12	72	26.00
14	60	22.50
16	72	21.50
17	60	22.00
18	72	21.50
20	72	21.25

CARBON

8	60	11.40
14, 12, 10	60	11.10
14	72	10.25
17	60	10.25
17	72	9.85
20	84	9.85
20	90	9.65
24	72, 84	9.85
24	96	9.60
30	84	9.75
40, 35	110	9.50
40	100	9.50

low stocks are due to slow ordering by distributors in the second quarter before volume increased sharply at the secondary level.

Some producers of high-nickel grades of stainless sheets are offering alternate shipments: November and December, if orders are rated for defense; into next year on unrated and less important tonnage.

Faced with mounting inquiries, distributors in the Cincinnati area are screening them to detect mill buyers. They are attempting to cover the needs of their regular customers.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 101

Order backlogs of rivet manufacturers extend into November because of the recent flood of new railroad car orders. Recently hiked prices on rivets, $9.95 per 100 lb on ½-in. and larger, and 32 per cent off list on 7/16-in. and smaller, are firmly established.

Steel supplies have been on the tight side due to a rejuggling of schedules by steelmakers during the short-lived strike. Deliveries have been delayed, but the situation is improving.

Rotary Electric Orders Mill

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., was awarded a $1.7 million contract for the manufacture of a 15-stand bar mill. The order was placed by Rotary Electric Steel Co., Detroit, manufacturer of carbon, alloy and stainless steel ingots, billets and bars.

Cost of the complete installation, including motors with a total nameplate horsepower of 3800, will total $4.5 million, according to J. A. Shimmin, Rotary Electric's vice president of operations.

Work on the new mill, scheduled to be in operation at Rotary Electric's plant by the second quarter of 1956, is already under way.

"The new equipment will provide Rotary Electric with a flexible operation, so that small orders can be rolled economically and quickly," Mr. Shimmin said. The mill will produce stainless steel rod and bar below Rotary's present range of ½-in. to supply the company's new wire drawing facilities in the stainless field.

"Addition of the rotary bar mill will increase our over-all hot-rolled bar capacity to 132,000 tons annually, diversifying our product line and strengthening our competitive position," Mr. Shimmin added.

Birdsboro Steel Foundry & Machine Co. makes steel mill machinery, hydraulic presses, steel castings and rolls, rock crushers and railroad equipment.

Roebling Opens Warehouse

John A. Roebling's Sons Corp., Trenton, N. J., opened a warehouse at 5988 Minerva Ave., St. Louis, to serve Missouri, Kansas and southern Illinois. The corporation, a wholly owned subsidiary of Colorado Fuel & Iron Corp., makes wire rope, electrical wire and cable, high-carbon specialty wires, cold-rolled steel products, tensioning materials for prestressed concrete, and builds ski lifts, aerial tramways and suspension bridges. E. H. Birkenmeier Jr. is in charge of the St. Louis area and warehouse.

CF&I Shifts Operation

Colorado Fuel & Iron Corp. is moving its Morgan plant operation from Worcester, Mass., to a new building at Palmer, Mass.

Aim is to increase efficiency of operations and add important new production facilities for wire and wire specialties, says CF&I President A. F. Franz.

Ground has been broken at Palmer for the new plant which will house the Morgan facilities for production of oil tempered wire, springs and wire forms.

Minutes Away—"The new plant at Palmer will be only 35 miles from the present Morgan operation, and it is expected that this will greatly facilitate the transfer of operations, as well as ease the adjustment of the Morgan employees to the new setup.

"We have urged most of our employees at the Morgan plant to make the move to Palmer with us," Mr. Franz said.

The modern, single story plant will have 160,000 sq ft of manufacturing space under roof, as well as a smaller two-story section to house new office facilities. It will be south of the present Palmer plant and buildings on the company's 58-acre plant site at Route 20 and Wilbraham street. It is expected that the new plant will be completed by the end of this year.

Upgrading—The move to Palmer is part of CF&I's policy of improving operation conditions and increasing the product diversification at its Eastern plants. It already has completed substantial improvements at its western plants, including construction of a new $30 million seamless tube mill at Pueblo, Colo. The company is conducting a parallel program to bring the eastern plants up to the competitive level of the western ones.

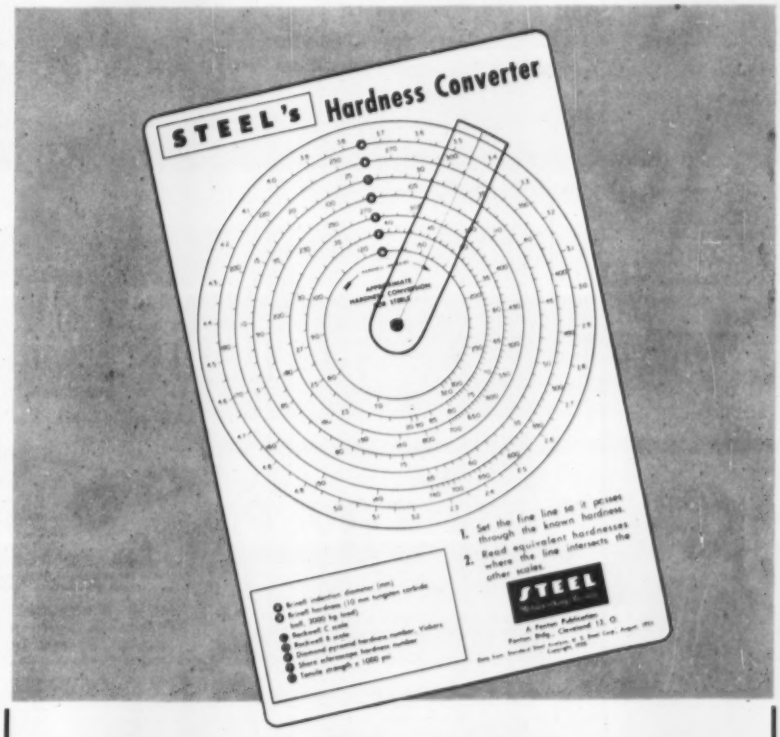
Modernized—"At Palmer, we have completely modernized our flow line, and the addition of the Morgan organization will result in an efficient blending with these operations, where we have already installed new equipment for a related product line," Mr. Franz reported.

"Far from representing a shrinkage of operation, the move from Worcester to Palmer is expected to result in expanded productive capacity for the company. We plan to step up our production of wire and specialty products," he said in conclusion.

Wisconsin Steel Buys Ovens

International Harvester Co.'s Wisconsin Steel Works, South Chicago, Ill., awarded a contract for design and construction of 52 by-product coke ovens to Wilputte Coke Oven Division, Allied Chemical & Dye Corp., New York.

The ovens, with a rated daily capacity of 795 tons of coke per battery, or about 290,000 tons a year, may be underfired with coke oven or blast furnace gas. The units will replace 45 outmoded ovens in use at South Chicago. Wilputte will begin building the ovens next April.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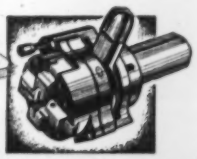

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Scrap . . .

Scrap Prices, Page 116

Cleveland—The steel scrap market continues extremely strong. There is no indication of a letup in consumption since finished steel orders are bulging mill books. The almost complete absence of mills in the scrap market indicates that the stage is being set for a return to the old "formula" days. During the pre-World War II period, mills unofficially arrived at prices and established the going market.

Leading brokers believe that the current situation will be short lived and that the law of supply and demand will exert its influence soon.

Strength in the market is evident in foundry grades. Higher prices have been posted at $51 to $52 on railroad malleable; $54 to $55 on rails, 2 ft and under; $55 to $56 on rails, 18 in. and under; $49 to $50 on rails, random length; $46 to $47 on cast steel; $52 to $53 on railroad specialties; $47 to $48 on uncut tires; $53.50 to $54.50 on angles and splice bars; $60 to $61 on rerolling rails.

Pittsburgh—Mills show little interest in No. 1 heavy melting scrap at present quotations. Brokers are paying less than $45 to fill their orders, suggesting that the increase in No. 1 grades has reached at least a temporary peak. Hot weather has held down operations to some extent, limiting the need for scrap.

Meanwhile, there is still a shortage of good blast furnace scrap. Higher prices on most commodities and an average $2 a ton increase on railroad scrap featured this market last week.

New York—While the trend in steel scrap prices continues upward, the advance is less feverish after several weeks of covering by brokers. Average advance in their buying prices is $1 a ton. Mixed borings and turnings, and low phos grades are unchanged. Stainless steel scrap, 18-8 sheets, clips and solids are close to $5 a ton higher.

Buffalo—Firmer tendencies prevail in the scrap market here. The leading mill consumer has placed orders for about 20,000 tons of steel grades at an advace of $2 a ton for No. 2 material. That advance was posted in addition to recent sharp advances registered on outside buying.

Strength was reflected also in other items. Higher prices attracted a greater flow of material, making supplies ample to meet present demands.

Philadelphia—Railroad specialties are quoted $2 higher by brokers in this district. Strength in heavy melting has pushed prices upward on lighter grades of cast and industrial scrap. Malleable also is higher with supply limited. No. 1 busheling and heavy turnings advanced about $1.50 a ton.

The domestic market, rather than foreign demand, is setting the pace in scrap prices.

Chicago—An easier undertone has developed in the scrap market here. Three top steelmaking grades (No. 1 and No. 2 heavy melting and No. 1 factory bundles) have moved for $1 a ton under the previously going market. Demand for material remains good, but has not materialized in sales. Consumers apparently are adjusting their buying to prevent another upward surge in prices. The easier price tone is strongest in broken-dealer transactions.

Cincinnati—The scrap market went through a backing and filling action last week after hitting a summit. Several reductions were made due either to an error in mill prices or to the necessity of maintaining a traditional price spread between certain items.

St. Louis—The local scrap market is at an uneasy price peak following a strong advance two weeks ago. Mills are taking what they can get at current prices but show resistance

(*Please turn to page* 118)

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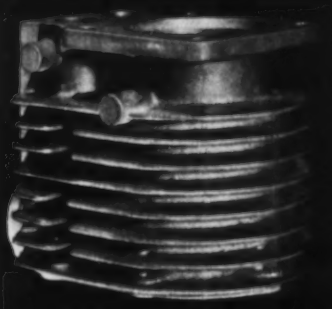

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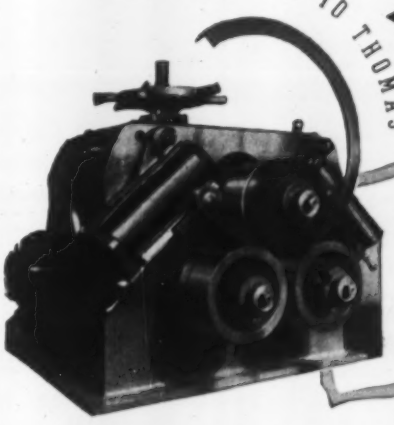

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PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Aug. 17	$44.17
Aug. 10	44.17
July Avg.	39.67
Aug. 1954	28.80
Aug. 1950	40.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumers plant)

No. 1 heavy melting	44.00-45.00
No. 2 heavy melting	41.00-42.00
No. 1 bundles	44.00-45.00
No. 2 bundles	*36.00-37.00*
No. 1 bushelling	44.00-45.00
Machine shop turnings	*26.00-27.00*
Mixed borings, turnings	*26.00-27.00*
Short shovel turnings	*31.00-32.00*
Cast iron borings	*31.00-32.00*
Cut structurals, 3 ft lengths	*48.00-49.00*
Heavy turnings	*42.00-43.00*
Punchings & plate scrap	*48.00-49.00*
Electric furnace bundles	*47.00-48.00*

Cast Iron Grades

No. 1 cupola	40.00-41.00
Charging box cast	35.00-36.00
Heavy breakable cast	35.00-36.00
Unstripped motor blocks	25.00-26.00
No. 1 machinery cast	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*
Rails, 2 ft and under	*53.00-54.00*
Rails, 18 in. and under	*54.00-55.00*
Rails, random lengths	*50.00-51.00*
Railroad specialties	*52.00-53.00*

Stainless Steel Scrap

18-8 bundles & solids	255.00-265.00
18-8 turnings	110.00-120.00
430 bundles & solids	100.00-105.00
430 turnings	60.00-65.00

*Brokers' buying price

CLEVELAND

(Delivered consumers's plant)

No. 1 heavy melting	43.50-44.50
No. 2 heavy melting	32.00-33.00
No. 1 bundles	43.50-44.50
No. 2 bundles	29.00-30.00
No. 1 bushelling	43.50-44.50
Machine shop turnings	23.00-24.00
Mixed borings, turnings	27.00-28.00
Short shovel turnings	27.00-28.00
Cast iron borings	27.00-28.00
Low phos.	45.00-46.00
Cut structural plates 2 ft and under	48.00-49.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	43.50-44.50

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	40.00-41.00
Stove plate	46.00-47.00
Heavy breakable cast	37.00-38.00
Unstripped motor blocks	29.00-30.00
Brake shoes	35.00-36.00
Clean auto cast	48.00-49.00
Burnt cast	37.00-38.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	*51.00-52.00*
Rails, 2 ft and under	*54.00-55.00*
Rails, 18 in. and under	*55.00-56.00*
Rails, random lengths	*49.00-50.00*
Cast steel	*46.00-47.00*
Railroad specialties	*52.00-53.00*
Uncut tires	*47.00-48.00*
Angles, splice bars	*53.50-54.50*
Rails, rerolling	*60.00-61.00*

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*275.00-280.00*
18-8 turnings	*130.00-140.00*
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting	46.00-47.00
No. 2 heavy melting	35.00-36.00
No. 1 bundles	46.00-47.00
No. 2 bundles	32.00-33.00
No. 1 bushelling	46.00-47.00
Machine shop turnings	24.00-25.00
Short shovel turnings	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	46.00-47.00
Electric furnace bundles	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00

CHICAGO

No. 1 heavy melting	41.00-43.00
No. 2 heavy melting	*34.00-35.00*
No. 1 factory bundles	43.00-44.00
No. 1 dealer bundles	40.00-41.00
No. 2 bundles	31.00-32.00
No. 1 busheling	41.00-43.00
Machine shop turnings	27.00-28.00
Mixed borings, turnings	29.00-30.00
Short shovel turnings	29.00-30.00
Cast iron borings	29.00-30.00
Cut structurals, 3 ft	44.00-45.00
Punchings & plate scrap	45.00-46.00
Electric furnace bundles	43.00-44.00

Cast Iron Grades

No. 1 cupola	*46.00-47.00*
Stove plate	*39.00-40.00*
Unstripped motor blocks	32.00-33.00
Clean auto cast	*50.00-51.00*
Drop broken machinery	*50.00-51.00*

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00
R.R. malleable	51.00-52.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Angles, splice bars	53.00-54.00
Rails, rerolling	64.00-65.00

Stainless Steel Scrap

18-8 bundles & solids	*265.00-275.00*
18-8 turnings	*140.00-150.00*
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

Chicago Mercantile Exchange

(Week ended Aug. 17)

	High	Low	Close
No. 1 Heavy Melting			
Oct.	....	....	39.00*
Jan.	....	....	....

Sales (160-ton units): None.
*Nominal.

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	39.00
No. 2 heavy melting	29.00
No. 1 bundles	39.00
No. 2 bundles	27.00
No. 1 busheling	39.00
Machine shop turnings	*21.00*
Mixed borings, turnings	*21.00*
Short shovel turnings	*23.00*
Punchings & plate scrap	*44.00*

Cast Iron Grades

Charging box cast	32.00
No. 1 cupola	39.00
Stove plate	32.00
Heavy breakable	32.00
Unstripped motor blocks	22.00
Clean auto cast	42.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	*32.00-33.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	32.00-33.00
Cast iron borings	15.00-16.00
Short shovel turnings	24.00-25.00
Machine shop turnings	*19.00-20.00*
Electric furnace bundles	*34.00-35.00*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*46.00-47.00*
Stove plate	*43.00-44.00*
Bar crops and plate	*40.00-41.00*
Structural plate, 2 ft	*39.00-40.00*
Unstripped motor blocks	*35.00-36.00*
Charging box cast	*27.00-28.00*
No. 1 wheels	*36.00-37.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 2 ft and under	44.00-45.00
Rails, 18 in. and under	48.00-49.00
Rails, rerolling	*53.00-54.00*
Rails, random lengths	*44.50-45.50*
Angles, splice bars	*44.00-45.00*

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting	46.00
No. 2 heavy melting	*40.00-41.00*
No. 1 bundles	46.00
No. 2 bundles	36.00-37.00
No. 1 busheling	*46.00-47.00*
Electric furnace bundles	*47.50*
Machine shop turnings	28.00-28.50
Mixed borings, turnings	27.00-28.00
Short shovel turnings	30.50-31.00
Structurals & plate	*48.00-49.00*
Heavy turnings	*42.00*
Couplers, springs, wheels	*50.00*
Rail crops, 2 ft & under	54.00

Cast Iron Grades

No. 1 cupola	36.00-38.50
Malleable	*50.00*
Heavy breakable cast	*45.00*
Drop broken machinery	*47.00*

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*40.00-41.00*
No. 2 heavy melting	*37.00-38.00*
No. 1 bundles	*40.00-41.00*
No. 2 bundles	*31.00-32.00*
Machine shop turnings	*20.00-21.00*
Mixed borings, turnings	19.50-20.00
Short shovel turnings	*22.00-23.00*
Low phos. (structural & plate)	42.00

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	*37.00-38.00*

Stainless Steel

18-8 sheets, clips, solids	*270.00-275.00*
18-8 borings, turnings	135.00-140.00
430 sheets, clips, solids	115.00-120.00
410 sheets, clips, solids	100.00-105.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	*35.50-36.50*
No. 2 bundles	*26.50-27.50*
Machine shop turnings	*17.50-18.00*
Mixed borings, turnings	*20.50-21.00*
Short shovel turnings	*22.00-22.50*
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	*35.00-36.00*

BUFFALO

No. 1 heavy melting	39.00-40.00
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	39.00-40.00
No. 2 bundles	*33.00-34.00*
No. 1 busheling	39.00-40.00
Mixed borings, turnings	*29.00-30.00*
Machine shop turnings	*27.00-28.00*
Short shovel turnings	*30.00-31.00*
Cast iron borings	*30.00-31.00*
Low phos.	*45.00-46.00*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	*47.00-48.00*
Rails, 2 ft and under	*51.00-52.00*
Railroad specialties	48.00-49.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	41.50-42.50
No. 2 heavy melting	35.50-36.50
No. 1 bundles	41.50-42.50
No. 2 bundles	*33.50-34.50*
No. 1 busheling	41.50-42.50
Machine shop turnings	*28.00-29.00*
Mixed borings, turnings	24.00-25.00
Short shovel turnings	*31.00-32.00*
Cast iron borings	24.00-25.00
Low phos., 18 in.	*45.00-46.00*

Cast Iron Grades

No. 1 cupola	*45.00-46.00*
Heavy breakable cast	38.00-39.00
Charging box cast	38.00-39.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	*43.00-44.00*
Rails, 18 in. and under	*52.00-53.00*
Rails, random lengths	*45.00-46.00*

†Nominal

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	36.50
No. 2 heavy melting	34.00
No. 1 bundles	36.50
No. 2 bundles	29.50
Machine shop turnings	25.00
Short shovel turnings	27.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	35.00
Heavy breakable cast	35.00
Unstripped motor blocks	35.00
Brake shoes	36.00
Clean auto cast	45.00
Stove plate	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	43.00
Rails, 18 in. and under	52.00
Rails, random lengths	48.00
Rails, rerolling	61.00
Angles, splice bars	50.00

SEATTLE

(Delivered consumer's plant)

No. 1 heavy melting	33.00
No. 2 heavy melting	29.00
No. 1 bundles	28.00
No. 2 bundles	23.00
No. 3 bundles	19.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Electric furnace, No. 1	42.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	38.00
Heavy breakable cast	30.00
Unstripped motor blocks	29.00
No. 1 wheels	30.00-33.00
Stove plate (f.o.b. plant)	25.00
Brake shoes	28.00-29.00

Railroad Scrap (Delivered consumer's plant)

Rails, random lengths	33.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	25.00
Machine shop turnings	10.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	43.00-45.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	27.00
No. 1 busheling	32.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	14.00
Cast iron borings	14.00
Cut structurals	34.00
Heavy turnings	12.00
Punchings & plate scrap	32.00

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	38.50
No. 2 heavy melting	35.50
No. 1 bundles	38.50
No. 2 bundles	32.50
Mixed steel scrap	32.50
Mixed borings, turnings	17.00
Rails, remelting	47.50
Busheling, new factory: Prepared	36.50
Unprepared	32.50
Short steel turnings	21.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.

PRODUCTION PROCESSES—THEIR INFLUENCE ON DESIGN

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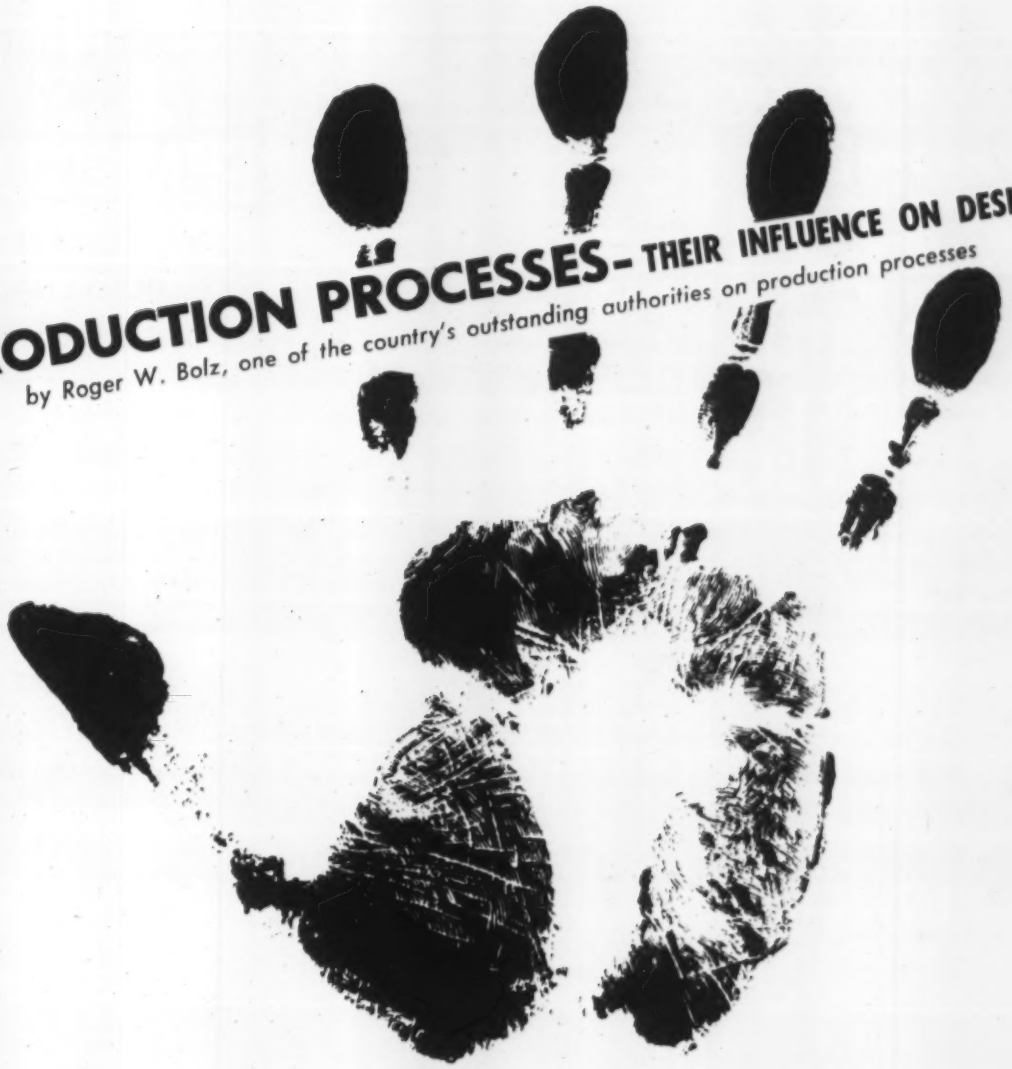

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(*Concluded from page* 115)

to up-bidding. Shipments to dealers are slow. Rail offerings are small and infrequent. The market awaits with interest the price consequence of an unusually large offering scheduled next week by the Missouri Pacific Railroad.

Birmingham—Due to strong dealer resistance, brokers must pay higher prices for open-hearth grades of scrap. The larger consumers in the area have ample inventories and are unwilling to pay higher prices.

Demand for electric furnace grades is increasing. Dealers holding tonnages are being offered as much as $2 a ton over the going market for single carload lots.

Cast iron demand is strong, but a good supply of pig iron, coupled with a fair flow of dealer scrap, is holding the market steady.

Exporters are being forced to reach farther inland to get their required tonnages—they often pay premiums.

Los Angeles—Although pressure from mills has slackened, the scrap market remains strong. Summer vacation shutdowns have reduced mill purchases to the lowest point since early spring, but dealers say their summer business will still be about 10 per cent better than last year's.

San Francisco—Steel scrap is in ample supply, but prices are firm in view of the above-market-price offerings made by exporters.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2600 tons, state highway bridge, Route 42, Camden-Gloucester counties, New Jersey, to Elizabeth Iron Works, Elizabeth, N. J., through Public Constructors Inc., Pleasantville, N. J.

1750 tons, plant buildings, Johnson & Johnson, North Brunswick township, N. J., to American Bridge Division, U. S. Steel Corp., Pittsburgh; Walter Kidde Construction Inc., New York, general contractor.

1385 tons, research center, United States Rubber Co., Preakness, Wayne county, N. J., to Elizabeth Iron Works, Elizabeth, N. J.; George A. Fuller Co., New York, general contractor.

1365 tons, upper roadway, Queensboro bridge, contract 6, New York, to Arco Welding Co., Jersey City, N. J.; Peerless Construction Co., New York, general contractor.

1300 tons, northbound section, City Line Ave. bridge, Philadelphia, to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Conduit Foundation Corp., Philadelphia.

1200 tons, Mid-Island shopping plaza, Hicksville, Long Island, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through Stackler & Frank, owners and operators.

750 tons, hangar and facilities, Naval air station, South Weymouth, Mass., to Groisser & Shlager Iron Works, Somerville, Mass., through John A. Volpe Construction Co., Malden, Mass., general contractor.

590 tons, printing plant, Watch Tower Bible Tract Society, Brooklyn, N. Y., to Pecker Iron Works, Brooklyn. Turner Construction Co., New York, general contractor.

420 tons, shop building, General Motors Corp., Linden, N. J., to Irving Steel & Iron Works.

(*Please turn to page* 120)

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MANUFACTURERS REPRESENTATIVE INDUCTION HEATING, well known and nationally advertised low and high frequency line. Should have proper contacts and experience to sell this type of equipment. Prefer organizations with other electric heating lines. Territories available: New England—New York—Philadelphia, Baltimore—Cincinnati, Louisville—St. Louis, Kansas City—West Coast. Reply Box 291, STEEL, Penton Building, Cleveland 13, Ohio.

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"Automatic" Sprinkler maintains a staff of Special Hazard ENGINEERS within easy reach of the 48 States and many foreign lands. Consult them in advance. They can help you to minimize fire loss and avoid costly shut-downs.

"Automatic" Sprinkler
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO
Offices in Principal Cities of North and South America

(*Concluded from page 118*)

New York; William L. Blanchard Co., general contractor.

360 tons, alert hangar, Stewart Airfield Base, Newburg, N. Y., to White Plains Iron Works, White Plains, N. Y.; F. D. Rich Co., Stamford, Conn., general contractor.

320 tons, state highway bridge, Horace Harding expressway, Queens county, N. Y., to Prospect Iron Works, New York; Hendrickson Bros., general contractor.

245 tons, state highway bridge, Horace Harding expressway, Queens county, N. Y., to Prospect Iron Works, New York; Slattery Foundation Corp., New York, general contractor.

240 tons, warehouse, Metal & Thermit Corp., Woodbridge, N. J., to Pittsburgh Bridge & Iron Works, Pittsburgh; George A. Fuller Co., New York, general contractor.

STRUCTURAL STEEL PENDING

8650 tons, state bridges, New York; bids Aug. 25, Albany.

400 tons, state bridge, Columbia county, Pennsylvania; A. C. Hack Inc., Bloomsberg, Pa., low, general contract.

REINFORCING BARS . . .

REINFORCING BARS PLACED

400 tons, section 2 of South Charles relief sewer, Brighton district, Boston, to Northern Steel Inc., Boston; Peter Kiewit Sons Co., Philadelphia, general contractor.

REINFORCING BARS PENDING

485 tons, concrete deck, Sakonnet river bridge, Portsmouth-Tiverton, R. I.; bids in.

170 tons, pier and shed, Provincetown, Mass.; Westcott Construction Co., North Attleboro, Mass., low, general contract.

PLATES . . .

PLATES PLACED

265 tons, floating roof tank, Esso Standard Oil Co., New Haven, Conn., to General American Transportation Co., Chicago.

210 tons, floating roof tank, Esso Standard Oil Co., Charleston, S. C., to Chicago Bridge & Iron Co., Chicago.

170 tons, 2.5-million-gal tank, Brooklyn Union Gas Co., Brooklyn, N. Y., to General American Transportation Co., Chicago.

115 tons, floating roof tank, Esso Standard Oil Co., New Haven, Conn., to General American Transportation Co., Chicago.

PIPE . . .

STEEL PIPE PLACED

1500 tons, bearing piles, Pier 11, Boston, to National Tube Division, U. S. Steel Corp., Pittsburgh; Merritt Chapman & Scott Corp., New York, general contractor.

860 tons, offshore drilling tower, Shell Oil Co., Avondale, La., to National Tube Division, U. S. Steel Corp., Pittsburgh.

765 tons, 22,900 linear feet, 24 in., Amoco, Va., to Bethlehem Steel Co., Bethlehem, Pa.; W. M. Kellogg Co., New York, contractor.

RAILS, CARS . . .

LOCOMOTIVES PLACED

New Haven, ten 1200-hp units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Chicago & Eastern Illinois, 200 fifty-ton boxcars, to ACF Industries Inc., New York.

Chicago Transit Authority, conversion of 80 street cars into rapid transit units, to St. Louis Car Co., St. Louis.

Milwaukee, 100 cabooses, to Thrall Car Mfg. Co., Ann Arbor, Mich.; 100 forty-ton boxcars, to Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

Lackawanna, 1000 boxcars and 200 covered hoppers; also, 73 semihighway trailers for piggyback freight service.

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TOUGH on the hands

Every time a worker's hands are snared by jagged metal, production suffers, and insurance men take a second look at rates. Skilled hands should never be bare hands. Protect them with Jomac® Work Gloves. Jomacs, made of rugged, springy, twisted-loop fabric, cut accident rates in plants throughout the country. Jomacs are low in cost because they wear so long. Write today for our new catalog.

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Outwear ordinary work gloves by 900%

Plants in Philadelphia, Pa., and Warsaw, Ind.

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. . . for ENAMELS • LACQUER • PAINT • VARNISH

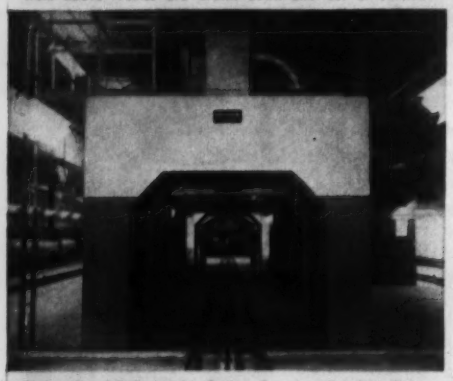
Interior of Mahon Pressurized Tack-Off Enclosure at entrance to Finish Coat Spray Booths. Spray Booth is visible in rear.

Mahon Dry-Sump, Down-Draft, Hydro-Filter Spray Booth with Remote Sludge Tank and Automatic Sludge Unloader.

. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

Over four thousand five hundred feet of conveyor carries automobile bodies through the various finishing operations in this Complete Mahon Single Production Line Finishing System.

Mahon Down-Draft Deadener Booth. Clean Filtered Air is supplied from above—Fumes are drawn down and out at bottom.



Mahon Dry-Off Oven with Cooling Tunnel at Exit End. Finish Baking Ovens are Similar with Multiple Controlled Heat Zones.

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The answer to that question is very simple. In the first place, they want Mahon *KNOW-HOW*. In the second place, they want their entire finishing system planned, coordinated, engineered and installed by one responsible organization. In other words, they want one responsibility for final results—which are the quality and the cost of the finish on a product. Many things enter into these two end result items . . . most important are the operating efficiency and the operating cost of the finishing equipment. Most manufacturers have found that this is where the true worth of Mahon equipment shows up . . . it isn't built to a price, it is built to do a job. If you have a finishing problem, or are considering new finishing equipment, you, like thousands of other manufacturers, will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . and better qualified to do the all-important planning and engineering of equipment —which is the key to fine finishes at minimum cost. You will find also, that Mahon equipment is built better for more economical operation over a longer period of time—a factor to be weighed carefully when comparing initial cost figures. Mahon will do your complete job on one contract . . . undivided responsibility for the entire system insures proper coordination and safeguards you against complications which can upset your production schedules. See Mahon's Insert in Sweet's Plant Engineering File for information, or write for Catalog A-655.

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HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

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MAHON

Never a shutdown to oil this Welsh Plug machine because Farval's on the job

FARVAL—
Studies in Centralized Lubrication
No. 175

THIS machine drives seven Welsh Plugs into the block of a well-known automobile engine. Uninterrupted operation is essential to its smooth performance as part of the automated line.

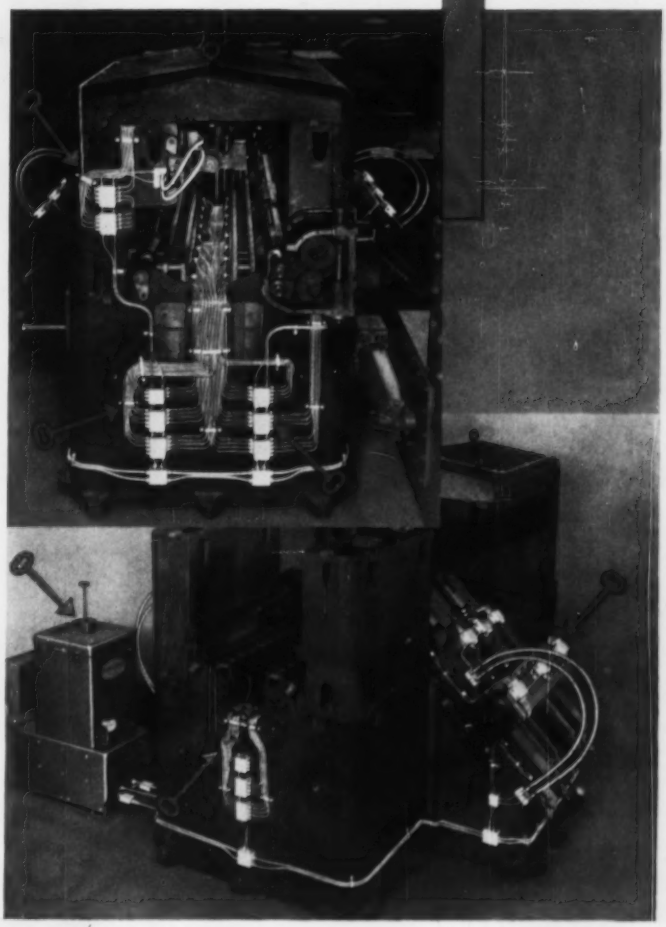
That's the reason the builder installed Farval Centralized Lubrication. These photographs were taken before final assembly of the machine, to show the extensive, orderly arrangement of Farval lubricant lines and valve manifolds serving 207 vital bearings—failure of any one of which would cripple the operation.

Now in service, the Farval system lubricates the machine automatically from the pumping station located at the left. It delivers a measured amount of oil to each bearing, as often as desired, while the machine itself is operating. Never a shutdown for lubrication! And no special oiler is needed.

Farval Automatic Lubrication is the ideal system for automation in any industry. The Farval Dualine valve placed at each bearing is simple, sure and foolproof—only two moving parts, without springs, ball-checks or pinhole ports to cause trouble. Its value proved by more than 27 years of successful service, Farval lubricates millions of industrial bearings.

Let us send one of our lubrication engineers to analyze your plant equipment and help you determine how Farval can serve you. Just drop us a line. Ask also for Bulletin 26. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

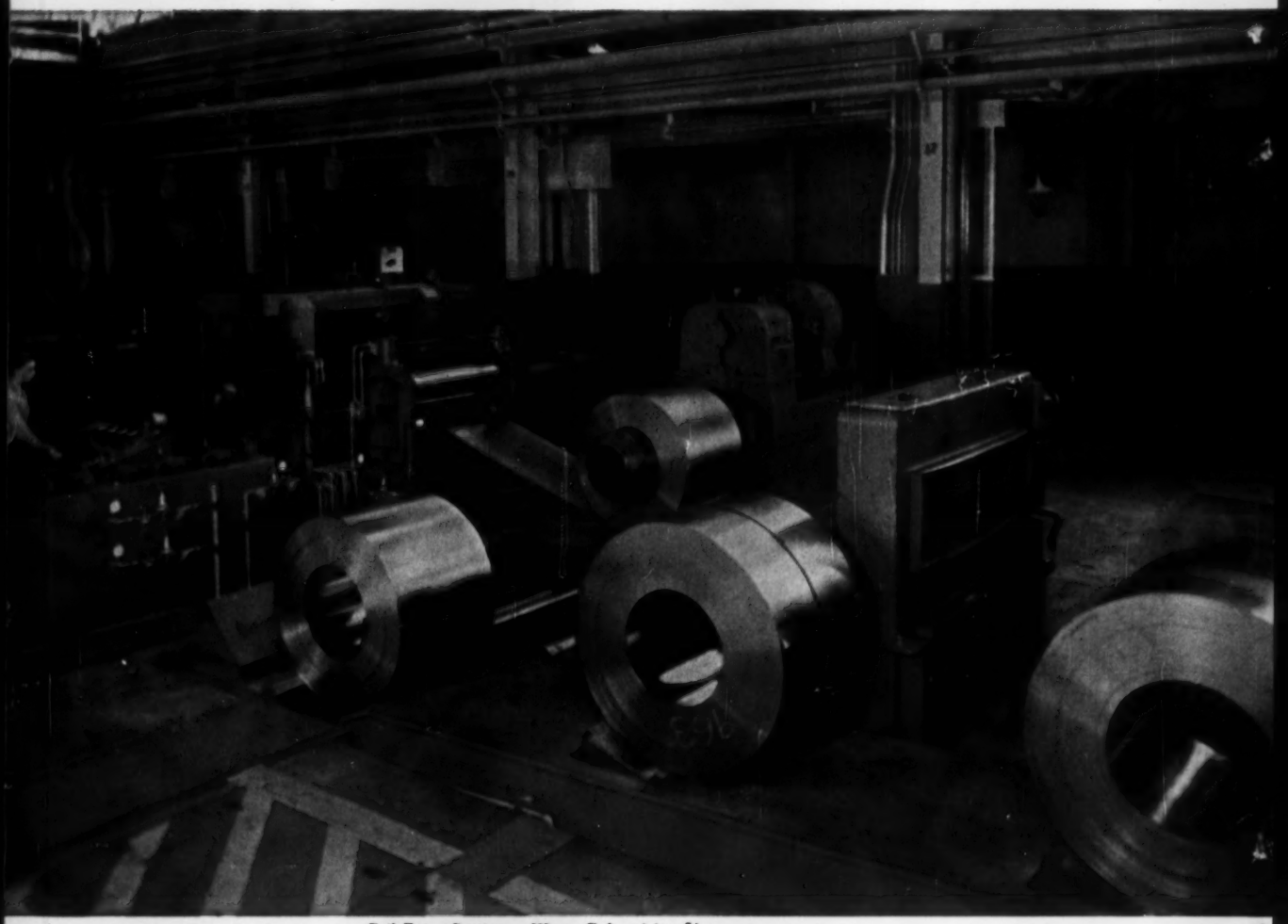


KEYS TO ADEQUATE LUBRICATION— Wherever you see the sign of Farval—the familiar central pumping station, dual lubricant lines and valve manifolds—you know a machine is being properly lubricated.

These photographs of a Welsh Plug Assembly Machine, showing Farval lines and valves on both sides, by courtesy of the builder, Sainte Claire Tool Company, Detroit, Michigan.

FARVAL
CENTRALIZED SYSTEMS OF LUBRICATION

THE BEGINNING OF BETTER
Galvanizing



Coil Entry Section — Wean Galvanizing Line

The WEAN ENGINEERING COMPANY · INC.
Warren, Ohio

Typical of Wean Advanced Engineering is this continuous hot dip galvanizing line that produces a vastly improved zinc coat steel at greatly increased speeds. Heavier coatings, tighter bonding and greater uniformity are now possible at reduced costs. It's this kind of never ending search for better ways of making better steel products that has established Wean as the nation's foremost designer and builder of sheet, tin and strip mill equipment.

SPECIALISTS IN SHEET, STRIP AND TIN MILL EQUIPMENT